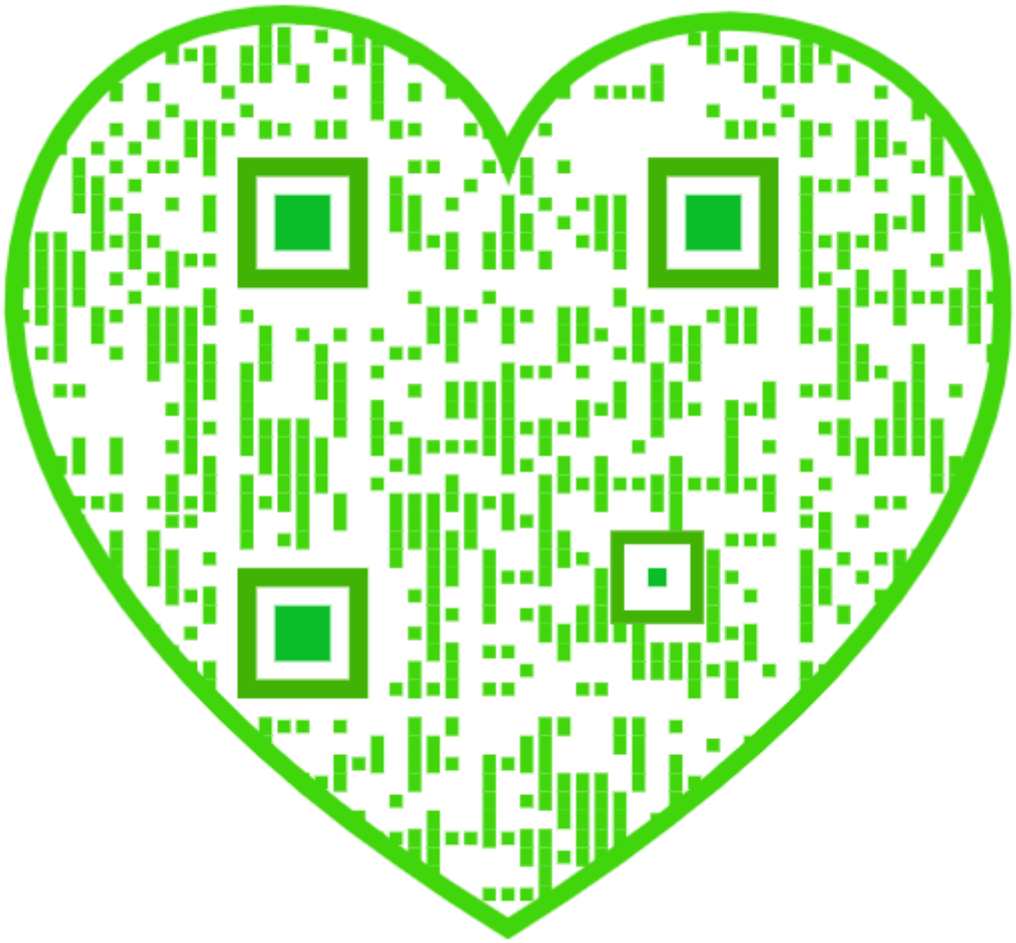
American Horse, Cattle and Sheep DOCTOR



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McCLURE'S

American Horse, Cattle and Sheep Doctor

BEING

A FULL DESCRIPTION OF THE DISEASES COMMON TO THESE ANIMALS, TOGETHER WITH A COMPLETE LIST AND METHOD OF ADMINISTERING THE MEDICINES REQUIRED IN : : : : : : THEIR TREATMENT : : : : : :

By Robert McClure, M.D., V.S.,

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PREFACE.

In the preparation of this work the motives of the author have been other than those of profit or popularity. A worthier object, one of broader and deeper purport, will perhaps manifest itself in, and grow out of, its careful examination and use—that of enabling the many thousands throughout the country, who have devoted less attention and fewer years to the subject, to reap the benefit of his experience. That much study and practice are essential to a work of this description, all will concede; for injury and loss to an incalculable amount must necessarily result where these are wanting. It is, therefore, because of his uniform success as a veterinarian, and his abiding interest in the noblest and most useful of animals, that the author has consented to publish THE AMERICAN HORSE, AND CATTLE AND SHEEP. The amount of care and labor expended upon it will be amply remunerated in whatever of suffering is alleviated, and improvement effected, in the treatment of the animals named in its title.

The reader will find the book throughout to be truthful, concise, and clear—free from any literary nicety or labored effort—frowning upon the destructive and injurious system

of bleeding, blistering, physicking and firing—opposed to the low feeding or starving of animals suffering from disease or accident. The diseases and treatment of each animal are considered under their simplest and best known names, and in alphabetical order, thereby affording to every one a work of practical usefulness and convenience of reference. The articles on the "Railroad Disease of Cattle," the "Cause and Prevention of the Texan Fever among Market Cattle," "Useful Hints on Feeding, and the Humane Management of Horses," "*Coup de Soleil*, or Sunstroke," "Frost Bites," and "Typhosus," among others, will be found of special interest to amateurs, farmers, and stock-breeders, in various parts of the country.

The advantage afforded the public in the low price of the work cannot fail to make it extensively useful in pointing out a safe and highly successful system. It is designed for a text book, presents much information contained in no other similar work, and wherever consulted, will awaken men to the many injurious teachings of old authors in new dresses.

The author desires in this connection to express his acknowledgments to X. A. Willard, A. M., and Hon. William I. Skinner, of Little Falls, N. Y.; and to Sylvester J. Megargee, Esq., of Philadelphia. Also, to S. J. Sharpless, William Massey, and Samuel Huston, Esqs., importers and extensive breeders of valuable stock, and to William Wallace, Esq., and Messrs. R. L. & C. L. Nicholson, all of Philadelphia.

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INTRODUCTION.

CAUSES OF DISEASE.

SCIENTIFIC men give three names when they speak of the causes of disease—*exciting*, *predisposing*, and *proximate*. The first may justly be termed the originators of disease; by the second is meant those more easily acted upon by causes that a more healthy animal would resist altogether; and the third is almost the disease itself. Of the causes with which we are acquainted, not many of them are alike, and their effects, that is, the disease, just as diverse.

These causes are named in the following table:

1. Electric, and other conditions of the atmosphere.
2. Food and water.
3. Overwork.
4. Poisons—animal, vegetable, mineral, and zumins, or ferments.
5. Malformations, or badly-formed parts.
6. Age and decay.
7. Changes of temperature
8. Hereditary influence.
9. Mechanical.
10. Starvation.

That the writer may be more clearly understood in

regard to these causes, examples will be given in the order above stated.

The first is looked upon as the cause of the many diseases which take on an epizoötic form. The second, rusty straw, and musty hay and corn fed to animals with weak stomachs. Third, riding too far and too fast, overloading, etc. Fourth, animals drinking out of leaden troughs, where pieces of old iron may be lying in the bottom. Inoculation by the virus from a glandered horse, are illustrations of animal poisons, zumins, or ferments. (See Glanders.) Fifth, a horse with point of hock inclined forward, which is the originator of curb. Sixth, an old horse or cow, with no teeth to chew its feed. Seventh, taking an animal from a warm and comfortable stable, and exposing it to a cold, north-eastern storm. Eighth, a flat forehead, transmitted from parentage, thus preventing a full development of the brain where the optic nerve is given off from the brain, thus insuring blindness about the seventh or eighth year, and sometimes earlier. None need be told of the disposition of the coarse-bred Canadian horse to become affected with disease of the bones, mostly in the form of ring-bone, (which see.) Ninth, stone in the bladder, and calculi in the bowels. Tenth, besieged garrisons, fortresses, when crops have failed, and famine.

HOW TO OBSERVE DISEASES.

We are sometimes asked how it is that we know so exactly what the disease is that this or that animal is affected with, as it cannot speak and narrate its ills and its aches. To this question we might repeat a common truism, "A shut mouth tells no lies;" therefore, nobody is deceived. *Nature* has but one set of *weights* and *measures*, and these

only should be used. Thus, if a horse have a corn or bruised heel, he will be as sure to go lame as he would with an ordinary sprain. The difference is, that he not only stretches out the sore foot, but he elevates the heel from the ground, and will not set his foot flat to *please*, or it may be said to *deceive* any one. The uneasy eye, the anxious expression, and the sharp, peculiar look, tell the tale of suffering, and bear testimony to a description so faithful and true, that every man should understand how to interpret them.

THE PRINCIPLES OF DISEASE.

Congestion.—By this term is meant an undue flow of blood into a part, and remaining in it. The blood-vessels lose the power of contracting and emptying themselves, as when in health. Congestion is not accompanied with inflammation, as some suppose, and may exist without irritation. Irritation is only present when the blood passes more rapidly into a part than its vessels can carry it out, and inflammation only is present when more fluid is thrown into the vessels than they can get rid of.

Irritation.—This peculiar condition is the result of increased sensitiveness, or an exalted action, accompanied with quickened beating of the heart and pulse. When we apply the term to special cases, it will be better understood, as irritation of the bowels producing diarrhœa, of the bladder frequently passing off urine, of the eye causing an increased flow of tears, and of the throat giving rise to cough.

Inflammation differs from irritation, inasmuch as it is more painful. There are three varieties—*acute*, *sub-acute*, and *chronic*. Inflammation has also three terminations:

(1.) *Resolution;* that is, it gives way, or is relieved before any alteration has taken place in the part so inflamed.

(2.) *Suppuration,* or the formation of pus.

(3.) *Mortification,* or death of the part affected, and the subsequent death of the animal. Inflammation is characterized by four conditions, or phenomena, as they are called—pain, heat, redness, and swelling. Inflammation assumes different degrees of intensity, modified by the cause, and the part or organ affected. When it is situated in the windpipe, (bronchitis, which see,) lungs, or bowels, great uneasiness and disturbance are manifest. In a few hours this condition gives way to depression.

Depression.—Many diseases of an inflammatory type, when their course is run, leave the system in a state of depression, or a low condition of vitality. How necessary, then, that this should be properly understood when treating inflammatory diseases, as one pint of blood taken from a large horse would, under these circumstances, cost him his life! Rather anticipate the weakness by supporting and husbanding the strength as much as possible, so as to overcome disease.

There are *two* great divisions of diseased action, which it will be well for farmers, and others interested in the welfare of their animals, to know, and these are: First. The exalted, or as it is called *sthenic,* or commonly known by the term inflammation, and requires for treatment, *not* bleeding, but medicine having the power of overcoming the exalted condition, by controlling the fast beating of the heart and pulse. This is easily done by the power of such agents as aconite or veratrum, (which see,) and without in any way impairing the strength and constitution of the animal. The second, or depressed condition of disease, and known as the *asthenic,* requiring a treatment

opposite to the above variety, namely, iron, gentian, etc., (which see,) to add to the strength of the animal, and quality of the blood. An improved diet, and in greater quantity, will, in many cases of depression, not only cure the disease, but remove the cause also.

FEVER.

There are four stages observed in fever:—

(1.) Weakness, loss of appetite, and low spirits.

(2.) A shiver, or chill, uneasiness, flanks move quick and short, nostrils more or less distended, one leg or ear hot, and the other cold.

(3.) After a time the coldness is succeeded by great heat and thirst, costiveness, urine scanty and high-colored, mouth hot and dry.

(4.) When the fever has lasted for a longer or shorter time, the skin becomes more moist, the bowels and kidneys act more freely; the pulse becomes more full, although not less frequent, and the mouth more moist.

When fever is accompanied with disease of the lungs, liver, or other organ of the body, or after an accident of any severity, it is then called *symptomatic* fever.

Fever is called *idiopathic*, when not accompanied by disease or accident. From the days of Galen to the present time, of the many theories advanced to explain its proximate cause, none seem to satisfy the philosophical student, and all belong to the unsolved problems in physiology.

Diseased Secretion.—A good example of what is here meant may be found in the discharges from the nose of animals affected with cold, influenza, and glanders. The salivary gland may secrete too much fluid, as horses eating second crop clover. We call this salivation.

Increased Secretion.—In health, serum is only supplied in sufficient quantity to keep the surfaces moist, the absorbent vessels preventing accumulations. In the cavities of joints this secretion is often too large, causing enlargements, of which a very good example may be seen in swellings of the the hock-joint, called bog spavin, and also in thorough-pin.

THE PULSE.

The pulse of the horse and the ox is felt on the inner angle of the lower jaw, as being the most convenient place. The state of the pulse tells the condition of the heart, whether the disease is of an exalted or depressed character, or whether sickness is at all present. The pulse is more frequent in young than in old animals. In the full-grown and healthy horse it beats from thirty-two to thirty-eight in the minute; in the ox or cow, thirty-five to forty-two; in the sheep, seventy to seventy-five; and in the dog, from ninety to ninety-eight. In inflammations and fevers the frequency of the pulse is increased. In debility and depression it is slower, but sometimes quicker than natural. There are the quick pulse, the strong, the sharp, the regular, the intermittent, and many other varieties, both fanciful and real, which few persons can appreciate. The pulse of inflammation and fever numbers from seventy-five to eighty beats in the minute; and in great debility, as in the last stage of glanders, accompanied with tubercles of the lungs, the pulse will number one hundred beats per minute.

BREATHING.

A good sized, healthy horse, will take one inspiration to three of the pulse beats. When the breathing is more

frequent or slower, and when irregular, or difficult and laborious, there is then disease; although we sometimes see the breathing quickened and short, when no disease is present. Both the pulse and the breathing will be quickened by exposure to heat, as in a stable up-stairs, and exposed to an August sun. By removing the animal to a stable not so situated, the breathing and the pulse will be greatly lessened. Hence the advantage of placing animals in a cool and airy place when they are unwell. It saves a great waste of their strength and vitality, thereby enabling them to throw off the effects of disease.

TREATMENT OF DISEASE.

The antiphlogistic plan of treating disease was derived from a theory now entirely exploded, and almost forgotten. Repeated bleedings, blistering, physicking, and starving on low diet, are some of the measures entering into the general plan which has destroyed more life and property than all the wars, ancient or modern.

Bleeding, in domestic practice, is almost discarded, and in veterinary practice it should never have been employed. And if this fact shall be the means of opening the eyes of those interested (and who is not?) in the health of the animals supplying us with meat, and the horse, (a willing and a faithful help,) to the injury done by bleeding in health or disease, the writer will have his reward. Avoid these measures, and substitute a rational and successful system of treating the diseases of your animals. Ascertain whether your horse is suffering from a disease of an exalted or inflammatory kind; substitute aconite, pure air, and *cold* water for bleeding, and in a few hours you will have no cause to regret the change. If the disease be of a depressed

kind, accompanied with weakness and debility, give nux vomica, iron, and a generous diet. If the disease be an eruptive fever, give sulphite of soda to purify the blood. In rheumatism, administer colchicum and carbonate of soda. In mange, apply the sulphuret of potassa to the skin, and thereby destroy the small insects which cause the trouble.

In hard swellings use the preparations of iodine, to cause their absorption. In lameness, allow absolute and entire rest, and apply hot or cold applications and slight irritants to the parts, to remove the products of the sprain. Ascertain the cause of disease, and having found it, have it removed, and the effects will cease. If the animal be costive from eating dry, concentrated feed, remove it, and give green feed or bran, but do not give physic. If diarrhœa be present, leave it, at least for a time, to itself, as it is nature's plan of getting rid of the offending matter. But, if it should continue, chalk and opium, as an astringent, are what is wanted. The reader cannot fail to see how simple, and his experience will demonstrate how successful these measures are in arresting and curing the diseases of all our domestic animals.

VIS MEDICATRIX NATURÆ, OR HOW DISEASES ARE CURED WITHOUT MEDICINE.

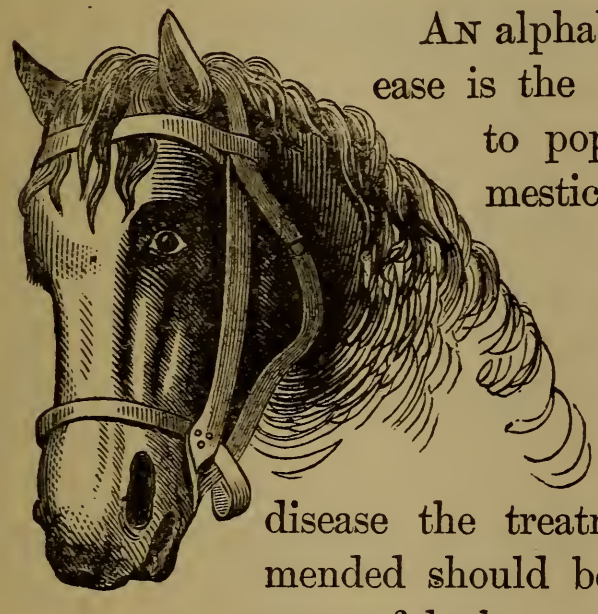
Intelligent persons have no difficulty in recognizing in the constitutions of animals and men a power of self-restoration, which is capable of resisting the influence of disease. It is this power that heals wounds, unites broken bones, and supplies lost substances. Diseases are not unfrequently efforts in this direction, intended to stay the action of hurtful material when admitted into the system. When

the eye, for instance, receives a particle of sand or hay-seed, the weeping of the secretions of pus are remedial measures to rid it of the offending matter. Poisons are good examples of the manner in which animals will cure themselves. When poison is taken into the stomach, irritation of the bowels is set up, followed by purging, as an effort to get rid of the poison. Nature, however, is not always successful, and the animal may die from the violent action set up. Again, a sprain will be cured by this very power, provided absolute and entire rest be allowed to the sprained part, without any interference from medicine or art. The remedial powers of nature often require assistance, as, for instance, in cases of debility, when the blood is becoming too watery. A few doses of iron, and in many cases a little extra food, will enable the sanative powers of the constitution to effect a complete cure. Often the removal of an animal from the sphere of exciting causes of disease, will cause the effect to cease, and the power of nature will cure the affection. Hence, many persons reflect upon the many instances when apparently severe cases of sickness were cured by some simple substance, and much credit given to a power it never possessed. Where the powers of nature are left to perform a cure, let the strength of the animal be maintained, because if that fail, where is the chance of recovery? Blood-letting and physicking are powerful and depressing agents; so much so, that when carried to any extent, few, if any animals, by the little power that may be left, will cure themselves. It is this knowledge that enables Homœopathists to continue their practice; for if it were not for this power in the constitution in each and every animal, Homœopathists would have long since ceased to practise their peculiar art. If farmers and owners of horses and cattle will only cease to bleed,

and pour nostrums down the throats of their stock, and learn to rely more upon the great curative that God has implanted in the constitution of all His creatures, as a power in protecting their lives when attacked by disease, it will surely be infinitely more profitable and pleasant to them. In curing disease, medicine and art should be directed to assist the powers of nature to overcome disease —nothing more.

DISEASES OF THE HORSE.

THEIR NATURE, SYMPTOMS, CAUSE, AND TREATMENT.



An alphabetical classification of disease is the only arrangement adapted to popular instruction and domestic use. As some diseases have more than one common name, a few references are all that may be necessary to find the particular disease wanted. In every disease the treatment I have *first* recommended should be tried; and, if it be not successful, the next in order will be taken. Also begin with the smallest dose, increasing, diminishing, or withdrawing it altogether, as the case seems to require. I do not think it necessary to quote authorities to substantiate what is said in regard to this or that medicine as a remedy, as the plans and remedies are those employed by the profession.

Abrasion signifies to tear off, and is applied to the skin when it has been rubbed or torn off, and to the lining membranes of the nose. The treatment will be found under that of bleeding wounds.

Abscess.—This is also called, by some persons, a beeling—a formation of matter or pus under the skin, as the result of inflammation, either acute or chronic. Sometimes abscess in bone is seen, also of the liver and the brain; and, indeed, no part or tissue of an animal is exempt from it.

Symptoms. Pain, heat and swelling; a projection or prominence on the swelling from which the hair falls off, disclosing a yellow, white and soft part upon its apex. In a common abscess of this kind, it will only be necessary to

ABSCESS LANCET.

hasten the formation of the pus by applying poultices of flaxseed or some other soft substance to the part, and when the point is soft and evidently contains fluid, make an opening on its lowest dependent point with a sharp knife, so that the discharge will flow out of itself, and then apply

Rain water, ... 1 ounce.
Chloride of Zinc, ... 6 grains.
Mix and apply to the wound twice a day.

It is not advisable to open an abscess too soon, or before the pus has properly formed. (See articles on Strangles and Fistula.)

Acari.—(See Mange.)

Accidents.—When a horse falls whilst drawing a vehicle—

1. Jump down and hold the animal's head, to prevent his dashing it about to his own injury.

2. Loosen the check-rein (if you are so foolish as to use one) and the parts of the harness which fasten on the vehicle

3. Back the carriage, so as to get the shafts and traces clear.

4. Steady and support the horse's head, and excite him, with hand and voice, to rise.

5. When you have got him up, pat and encourage the poor animal, and see if he is wounded, or otherwise injured.

6. Let him stand still a short time to recover himself, and then proceed gently and with greater caution than before. (See Sprains, Bruises, Bleeding, and Wounds.)

Aconite.—(See Medicines.)

Alteratives.—This term is not very scientific, but it is in very general use, and easily explains its own meaning, though the *modus operandi* of the drugs employed to carry it out is not so clear. The object is to replace unhealthy action by a healthy one, without resorting to any of the distinctly-defined remedies, such as tonics, stomachics, etc. As a general rule, this class of remedies produce their effect by acting slowly but steadily on the depuratory organs, as the liver, kidneys, and skin. The following may be found useful for general use:

Black sulphuret of antimony, . .	2 to 4 drachms.
Sulphur, ...	2 drachms.
Nitre, ...	2 drachms.

To be given mixed in cut feed at night only.

Amaurosis.—Glass eye. (See Eye Diseases.)

Anæmia.—Deficient or bad blood.

Anchylosis.—(See Spavin and Open Joints.)

Aneurism.—A pulsating tumor, produced by the rupture of the inner coats of the vessel, and the blood getting between it and the outer coat. They manifest themselves in many parts of the body. An expert surgeon is only

capable of remedying it, as great danger of bleeding to death would result from opening a tumor of this kind.

Apoplexy.—*Symptoms.* The animal falling suddenly, loss of feeling and the power of motion, and breathing deep and slow. In most cases the horse gets up again, shakes himself, and proceeds on his journey almost as if nothing had happened, but it will shortly be seen that the animal is not so lively as formerly, and that it will afterwards be unsafe to use him, especially for a family carriage, as in a fit of this kind the horse may become entirely unmanageable, and can only be controlled by a power stronger than his own. Horses subject to disease of this kind, will, at times, be observed to look sleepy, with a slight knuckling of the hind pastern-joints, accompanied with stiffness of the hind quarters and lopping of the ears. All these symptoms are seen in brain disease, as Staggers, Megrims, and Epilepsy. (Which see.)

Causes. Breaking of a blood-vessel, effusion or water on the brain, producing pressure, too small a collar on a thick-necked horse, interfering with a free circulation of the blood to and from the head, effects of the sun—sunstroke. (Coup-de-soleil.)

In severe cases of Apoplexy, many never have the use of their legs again, by their remaining palsied. (See Palsy.)

Treatment. Apply chopped ice to the head, in bags, and secured by proper fixings. Keep up a free circulation in the legs by rubbing and woollen bandages, or warm water cloths, and renewed every half hour. Then apply a small blister of

Spanish Fly, ... ½ drachm.
Hog's Lard, ... 2 drachms.

Mix them well together, and rub the salve well in by the hand on the part just behind the ears.

Do not bleed, as that measure will only insure effusion, and, as in the brain, ultimately cause death or dumbness. (Which see.)

If there be much exaltation or excitement, give fifteen drops of the tincture of aconite root every four hours, till five or six doses are taken. If the contrary condition be present, that is, depression, give from ten to fifteen drops of the tincture of nux vomica four times a day, for a few days, or a week, if necessary. These medicines are best given in cold water, when the animal will drink it; if not, mix with a cup of water, and drench out of a stout-necked bottle. Feed the horse generously and well.

Aphtha—(See Mouth Diseases.)

Atrophy—Wasting and shrinking of a part of the muscle, as is seen in *sweenie* of the shoulder; consumption and disease of the mesentery, and also palsy or paralysis of the hind legs, from which the muscles of the hip will be seen to have fallen away.

Causes. The parts deprived of their proper use, action or function. A long-continued corn on the foot of a horse, depriving him of the proper use of that limb, will cause shrinking of the *subscapularis* muscle of the shoulder.

Treatment. Removal of the cause, and restoring the functions of the parts to their proper condition. In case of many joint diseases, it will be necessary to have the horse walked before he is cured, to prevent too much wasting of the parts from long standing and want of use.

Back Sinuses.—(See Sprain.)

Baldness.—(See Skin Diseases.)

Belly-ache.—(See Colic.)

Big Head.—(See Osteoporosis.)

Bishoping.—Bishoping is the name of an operation performed upon the front or nipper teeth of horses that are more than eight years old, for the purpose of imitating the mark of the teeth of young horses, in order to deceive those persons who are supposed to be poor judges in the age of horses. It can rarely deceive any person of ordinary intelligence. The general appearance of the horse will soon tell, if he be an old or young animal.

Bite of Mad Dog.—When any reasonable suspicion exists that the dog is mad, have the parts completely washed out with cold water, if possible forced with a syringe or hydrant, so as the water will find its way to the bottom of the wound, and wash out any virus that may have lodged there.

If the bite be upon the leg of man, horse or other animal, or man's arm or finger, a *Tourniquet* or soft rope or cord should be tied tightly around the leg *above* the bite, till other measures are used to have the bite purified. After the cord is properly applied, have the parts washed out; next either cut a portion of the flesh from the top, sides and bottom of the wound, or apply caustic to the parts. The nitrate of silver is possibly the best for this purpose. A few drops of nitric, hydrochloric or sulphuric acid may be dropped into the wound, and by the burning properties of these articles the destructive character of the poison will be destroyed.

After these measures have been satisfactorily performed, the wounds should be treated as for common wounds with simple ointment (see Prescriptions and Medicines). The bite of other rabid or poisonous animals should be treated in the same manner. Persons have been bold enough to have allowed themselves to be bitten by mad dogs no less than seven times, and then applying the nitrate of silver as a

caustic to the bites, never became affected with the canine disease. However, too much dependence should not be placed in any one measure as a protection in such cases. The great protection is, do not allow yourself to be bitten at all, if it can be avoided.

Bites from a healthy dog will never produce madness, even although the animal go mad in a year or two afterward, so keep your mind easy on that point.

Bladder Diseases.—1. INFLAMMATION.—This condition of disease is sometimes met with, but is rare in horses.

Causes. Irritating substances or foreign bodies in the bladder.

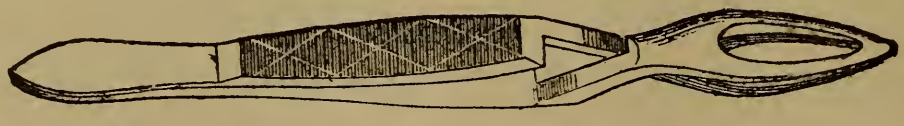
Symptoms. Constant desire to make water, pain, straddling or walking wide with the hind legs, great tenderness under the belly.

Treatment. Inject a little warm oil into the bladder. This can only be done by an expert and with a proper instrument. Give 25 drops of the tincture of aconite root every 4 hours, till six doses are given, to keep down pain. Allow flaxseed tea to drink, or drench the horse with it, which has an excellent soothing effect. Give plenty of cold water to drink.

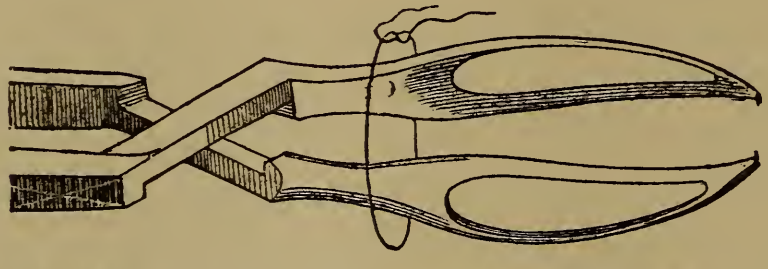
2. CALCULI.—This variety of stone is sometimes found in the bladder and kidneys of horses. This may be said to be the gravel of the horse, although not so common as in man, but is equally troublesome, and requires for its cure a formidable operation called *Lithotomy,* an operation of no great magnitude to an expert surgeon, but can scarcely be undertaken by an unprofessional person, even though a description of it were given.

Bleeding.—1. BLEEDING.—An operation for the drawing of blood from the body, either locally or generally.

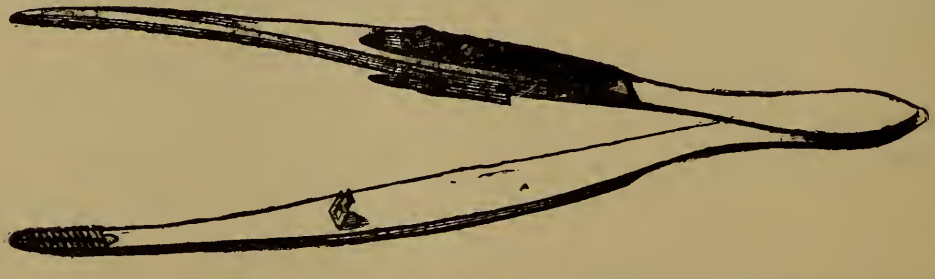
As before stated, it is almost entirely discarded from domestic practice, and should never be used in the treatment of diseases of animals, however much the adherent of an exploded and an erroneous system may doubt it. Medicines will be described in this book that will not only insure greater success in saving a very much greater percentage of sick animals, and with less trouble in a much shorter time, and without in any way impairing the sanative powers of the animal's constitution.



ARTERY FORCEPS, SHUT.



ARTERY FORCEPS, SHOWING HOW A LIGATURE IS PASSED OVER TO TIE THE BLEEDING VESSEL.



FORCEPS FOR LIFTING BLEEDING AND WOUNDED BLOOD VESSELS SO THAT THEY MAY BE TIED.

2. Bleeding from Wounds.—If the wound be a simple one, and not on the inside of a leg where the large blood vessels are situated, all that will be necessary to stop it will be a small piece of cotton or soft cloth placed in and

over the wound, and secure it for a few hours by a broad bandage, not too tightly applied over it, or, if preferred, touch the mouth of the bleeding vessel with a piece of iron previously immersed in boiling water or in the fire itself. The surgeon's plan would be to get hold of the mouth of the vein or artery with a pair of artery forceps or small tongs, to hold it so that he can tie a piece of saddler's silk around it. If the wound be on the inside of the hind or fore leg, and the blood of a scarlet color, (see Blood,) place pads of cloth and bandage pretty tightly over it, and run for a good surgeon, and tell him what the trouble is, so that he will go properly prepared for his work.

3. Bleeding from the Air Passages and Lungs.—Observe the color of the blood discharged from the nose or mouth, as the veins of the lungs convey blood similar to the arterial blood of other parts of the body.

Causes. The laying bare, and the rupture of small vessels, and the structure of the lungs, breaking down as in consumption, and some cases of glanders and coryza.

Treatment. Support the strength by the mineral acids, (see Acids,) and small doses of aconite to lessen arterial circulation. Bear in mind in cases where the structure of the lungs is falling to pieces, no power or art can arrest it. Hence, the incurability of consumption.

4. Bleeding from the Skin.—This disease is sometimes called *purpura.*

Symptoms. After general uneasiness, some pain, fever, and swelling of the legs and other parts of the body; tumors, varying from the size of a cranberry to that of a pigeon's egg, often running together, forming large patches from which blood is oozed out in great quantities, giving rise to much debility. The contagious typhus or rinderpest of cattle, bears many resemblances to this disease of the horse.

Treatment. Feed the animal on the best food that can be procured, and pour forty drops of commercial sulphuric acid in half a bucket of cold water three to four times in the day. Then get two ounces each of the sulphate of copper and gentian root in powder, and divide into eight powders, and give one night and morning in the feed.

Apply to the bleeding surfaces and sores, a liniment composed as follows: Olive oil three ounces; creosote one ounce; mix and use once in the twenty-four hours. (See Mouth Diseases.)

Bloody Urine.—(See Kidney Diseases.)

Blood.—Blood is observed to be of *two* colors, namely, red, or almost of a bright scarlet. When blood of this color is issuing from wounds in jets or jerks, it is considered more dangerous than if it were of a dark-red, or venous blood. The first is direct from the heart itself, and the other is from a more remote and less dangerous part.

It may be interesting to know, that red globules are more plentiful in blooded or well-bred horses than in horses of a coarser kind, which accounts for a curious fact observed in the difference of vitality. Thus, a blooded horse bears up under diseased action, and is cured, whilst a western or common horse will die under the same disease.

The fluid portion of blood is called *liquor sanguinis*, in which the red globules or spheres float. When blood is drawn from the body, it divides into two parts: the solid is called *clot*, and the other is the *serum*. This serum was once relied upon, and is still by the ignorant, as showing the existence of inflammation. It is by the blood that the strength, wear, and tear of the system is kept up. The heart is the organ by which the blood is forced through the body. If the blood be thin and watery, it is called *hydro-*

nemia. (See Dropsy.) If pus be in the blood, it is then called *pyemia.* (See Glanders.)

Boils.—(See Saddle or Harness Galls.)

Bots.—(See Worms.)

Bowels, Disease of.—(See Costiveness, Diarrhœa, and Dysentery.)

1. Inflammation of the Bowels.—*Symptoms.* Acute pain in the belly, and continuous, getting no intervals of rest from the pain. Rolling, pawing, and shifting about, sweating, and breathing fast, with great fever, exaltation, and excitement. A fearful disease. Happily not so frequent as formerly.

Can only be mistaken for colic, (which see.) In colic there are times of ease from pain, but never in this disease.

Causes. Exposure to cold, drinking cold water in great quantities when hot, calculi, or hair balls in the bowels, costiveness, diarrhœa, and as a sequel to colic, lead and other poisons, (which see.)

Treatment. The first thing to be done is to lessen or destroy pain. Give a large dose of the tincture of aconite root, say thirty drops, to be repeated in two hours. Apply blankets wrung out of boiling water to the belly, and renew them in about twenty minutes.

Give injections of *warm* not *hot* water, soap, and a handful of table salt every half hour. Continue the treatment while there is enough strength remaining.

Bleeding will only insure and hasten death, and purgatives are too slow to act—the horse is either dead, or will be before any response can be had from them.

Brain Diseases.—The brain and its coverings, or membranes, are subject to inflammations of every degree. (See Apoplexy and Staggers.)

Breaking Down.—This accident means or consists in rupture of the tendons and ligaments, and occurs, at once when the horse is at full speed.

Symptoms. The horse stops suddenly, or perhaps stumbles and falls; gets up, but stands on his fetlocks, the toe of the foot turned up, and the sole of the foot, as it were, looking at you.

Treatment. If the fetlock comes entirely to the ground, not much can be done; and when it does not, contraction of the leg takes place, and requires division of the tendon. (See Tendiotomy.)

Breathing Short.—This is a symptom of irritation, inflammation, debility, weakness, oppression of every kind, and fever, (which see.)

Breeze Flies.—This is the fly supposed, but erroneously, to be the one that deposits the ova or eggs. which generate bots in horses. (See Worms.)

Brittle Feet.—(See Foot Diseases.)

Bronchi.—This term means the windpipe, and communicates and carries the atmosphere to and from the lungs. It is the seat of disease, and is affected more or less in all cases of colds and inflammations, whether of the lungs or their membranes—the pleura.

Bronchitis.—Inflammation of the Air Passages or the Parts Enumerated Above.—This is a very common disease among horses, and is confounded by most horse doctors with inflammation of the lungs, distempers, and colds; whereas, it is distinguished from inflammation of the lungs by its seat, and from the others by as great a dissimilarity.

Bronchitis occurs in various degrees of intensity, and

should at least be described under two heads, notwithstanding the one distinction may run, as it does sometimes, into the other.

1. ACUTE BRONCHITIS.—*Symptoms.* Ushered in by a chill, fever, harsh or painful cough, loss of appetite, heaving at the flanks, mouth hot and dry. In a day or so, a discharge of pus or matter will be observed from one or both nostrils.

If bleeding, or other severe measures be used, the horse will assuredly die, not so much from the disease, but from maltreatment. Better, in a disease of this kind, let nature have her way, and give the horse a chance for his life; for in the other case, he has absolutely none whatever.

Treatment. First, the horse should be treated as for fever. Place the horse in an open or airy place, embraced by the word "comfortable." Obviously it would not be comfortable to place a sick horse in an open place, with the thermometer below zero. In July or August it will not be necessary to burden the animal with blankets.

Give him from fifteen to twenty drops of the tincture of aconite root every four hours, till six doses are taken. This will relieve the fever, breathing, and the hot and dry mouth. Give plenty of *cold* water to drink, for pain and fever require plenty of fluid, as all the secretions are dried up. Let the animal have a little grass, if it can be got: this will relax the bowels, and cool the stomach. On the second day, the following medicines may be given, that is, if they be necessary: Powdered gentian root, two ounces; powdered nux vomica, one ounce. Mix, and divide into six powders, and give one powder morning, noon, and night. These medicines will prevent debility and depression, and the pouring out of fluid or serum into the legs, sheath, belly, and breast. After the fever has been re-

moved, allow good feed, and a fair quantity of it. Such treatment will not only cure the horse in five or six days, but the horse is nothing the worse, beyond the loss of a few days' work.

2. Chronic Bronchitis. — *Symptoms.* A confirmed cough, more or less severe, and a discharge from the nose. The cough worse in the morning, and after drinking water.

Causes. Maltreatment of acute cases of bronchitis, and where the attack has been prolonged beyond a reasonable time, causing ulceration or thickening of the windpipe.

Treatment. Give extract of belladonna, half drachm, powdered digitalis, half drachm, three times in the day, morning, noon, and night, for a few days. If no good seems to have been done, a different plan will have to be adopted, namely: feed the animal well, and give sulphate of iron, two drachms in powder; gentian root, two drachms in powder—twice in the day for two weeks. By this time the absorbent system will be pretty powerful. Then apply the following salve or ointment, well rubbed in down the course of the windpipe, once in the week. Lard, one ounce; red iodide of mercury, one drachm. Mix. This will cause whatever thickening may exist, to be absorbed or taken up. Lard or oil will have to be applied once per day on the place where the ointment was applied, to prevent the skin from cracking. If the animal be debilitated, give occasionally sixty drops of commercial sulphuric acid in half a bucket of cold water to drink.

Bronchocele.—Pronounced "bronch-*seal*," is an enlargement of the thyroid gland, and is situated on and in front of the windpipe, about three inches from the lower jaw. In horses it is only an eye-sore or blemish.

Causes. In the horse it is unknown, nor is it determined

what office or use the thyroid gland performs in man or animals.

Treatment. Apply with friction by the hand once a week, bin-iodide of mercury, one drachm ; hog's lard, one ounce. Mix, and make an ointment. Rub in a piece about the size of a hickory-nut over and around the enlargement.

Broken Knees.—When a horse stumbles and falls upon his knees, and takes the hair and some of the skin off, this is called broken knees.

Treatment. Wash and cleanse the parts from sand and dirt, and if the skin is ragged and torn, clip off with a good pair of scissors. After this is done, ascertain if there is any discharge from the sore of an oily substance, and if so get a smooth piece of iron, immerse it for ten minutes in boiling water, and apply it to the edges of the wound, so as to cause the parts to swell, and prevent the escape of the joint oil; for if this be allowed to escape, the ends of the bones will come against one another. Irritation and inflammation will be set up, and either destroy the life of the horse, or make an anchylosed or stiff joint. This is an important point to be observed, and that very early in all cases of broken knees or open joints wherever situated. After the hot iron has been applied, use the following wash twice in the day:—Sulphate of zinc, half an ounce ; rain, or soft water, eight ounces. Mix. This will heal the sore, and prevent proud flesh from growing. This wash will answer for the more simple wound of the knee, and where there is no open joint. Do not apply bandages, as they will cause the whole leg to inflame and swell. Sometimes a kind of pouch will be formed by the lower edge of the wound, holding whatever

pus or other fluid may escape. This pouch should be opened at its lowest bottom, so as to let the fluids out, and to prevent a bulge or permanent swelling remaining after the knee has otherwise healed. By attention to this, very little or no blemish or scar will be left to tell the tale of a stumbling horse, or a bad horseman.

Bruises of the Sole.—(See Foot Diseases.)

Burns and Scalds.—Injuries inflicted upon some parts of the body by the application of solid heat, is called burns; by fluid heat, scalds.

Treatment. In horses the treatment is chiefly local; for in cases of fire in large cities, the generation of steam is sometimes so great, that it is inhaled by animals in the burning building: this is termed scalding. Not much can be done, nor is there much hope of a cure in cases of this kind. The utmost that can be done is to give plenty of cold water to drink, and keep down pain by means of aconite, (which see.)

For burns the best application will be, one pint of linseed oil, and half a pint of lime water, stirred together, or rather whipped (as cooks usually do eggs,) till the mixture is like thick cream. This is to be applied to the burned places, spread on cotton or linen rags, for a few days; then the sores are to be dressed with green ointment. (See Ointments.)

Bursa Mucosa Enlarged.—(See Spavin and Wind Galls.)

Calculi.—Stone in the bladder.

Cancers.—This is a hard tumor, malignant in its character, at first small in size, but rapidly increases, and becomes ulcerated. The horse is not affected with so many varieties of cancerous growth as the ox and the dog, and

even man himself. Melanotic cancer is most commonly seen in gray horses, or those that turn white with age. A small hard tumor is usually seen under the root of the tail, and about the anus.

When tumors of this kind are seen on gray horses, it may reasonably be expected that growths of the same character will be found inside, on the spleen, stomach, and liver. Horses so affected may work well for years, and may not for a month. The tumors increase in size; when cut into, they discharge a fluid as black as the ink of the cuttle-fish.

Causes. As this disease is not seen in young gray horses until after they have almost turned white, it may be inferred that the cause results from the loss, or want of the usual pigment, or coloring matter, which gives color to the hair, thus depriving the animal of some protection from the air or sun. I think, however, that the *true* cause will be found to be, not in the *loss* of the coloring matter, but of its *transfer* from the skin and hair to the blood. Hence the inky color of the contents of the tumors. This opinion, which is my own, is still further corroborated by the fact that if the pus be taken from an abscess and injected into the blood of a healthy animal, carbuncles containing pus will soon manifest themselves.

Treatment. Incurable; but when one of these tumors breaks, treat it as an ordinary abscess, (which see.)

Canine Rabies.—(See Hydrophobia.)

Capped Elbow.—This is an enlargement on the point of the elbow, just behind the shoulder, and on the side of the chest; sometimes it is in the form of a simple abscess, (which see.) But the usual form is that of an encysted tumor, or a fluid contained within a cyst of fleshy walls which do not suppurate.

Cause. The horse, when lying, rests the point of the elbow upon the heels of his front shoe. It is a symptom of disease of the leg, preventing the animal from properly flexing or bending the leg proper upon its thigh or arm. Hence, the elbow rests upon the foot.

Prevention. Remove whatever disease may be in the leg, and place a pad of leather, or of coarse, heavy cloth, over the back part of the foot. Pads are made by harness makers.

Treatment. Make an incision with a sharp knife through the skin, over the centre of the swelling, and carefully dissect the cyst from its attachments. This can be done with the fingers and a blunt piece of wood, flattened at its point like a butter knife, and no sharper. If the operator be timid, and think he cannot cut the cyst out, open it, and let out the matter, and inject, once per day, a little tincture of iodine, to kill the walls of the cyst, so that it will not fill again. (See Medicines.) A knife is only wanted to cut the skin. After the tumor is taken out, treat the part as a simple wound, by keeping it clean, and applying a solution of zinc, or blue stone.

Capped Hock.—This is a soft swelling on the point of the hock-joint.

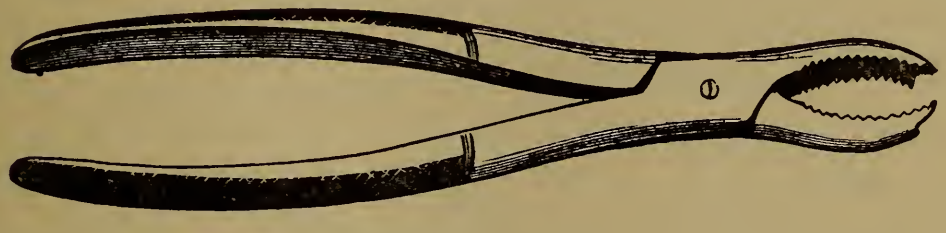
Causes. Kicking in the stable or in harness, lying upon stone-paved stalls, and from being kicked by another horse.

Treatment. Apply cold water cloths to the part for a few days, taking them off at night. After the heat and tenderness have subsided, apply, with rubbing, once every fifth day, for three times, if it be necessary, an ointment composed of one drachm of iodide of mercury; and hog's lard, one ounce. Mix.

Carditis.—This is applied to disease of the heart. Heart

disease is also known as the Thumps. *Incurable.* (See Heart Disease.)

Caries.—This term means an ulceration of the bone. The most frequent form of caries is seen on the lower jaw-bone; the teeth are next affected. If the upper teeth be ulcerated to any extent, a fetid (stinking) discharge will run from the nostril upon the side on which the diseased teeth are situated, which has been repeatedly mistaken for glanders by "horse doctors." If caries of the bones of the head exist, the swelling of the head will be enormous—Big-Head, or OSTEOPOROSIS—and not *Osteosarcoma*, as it has been called.



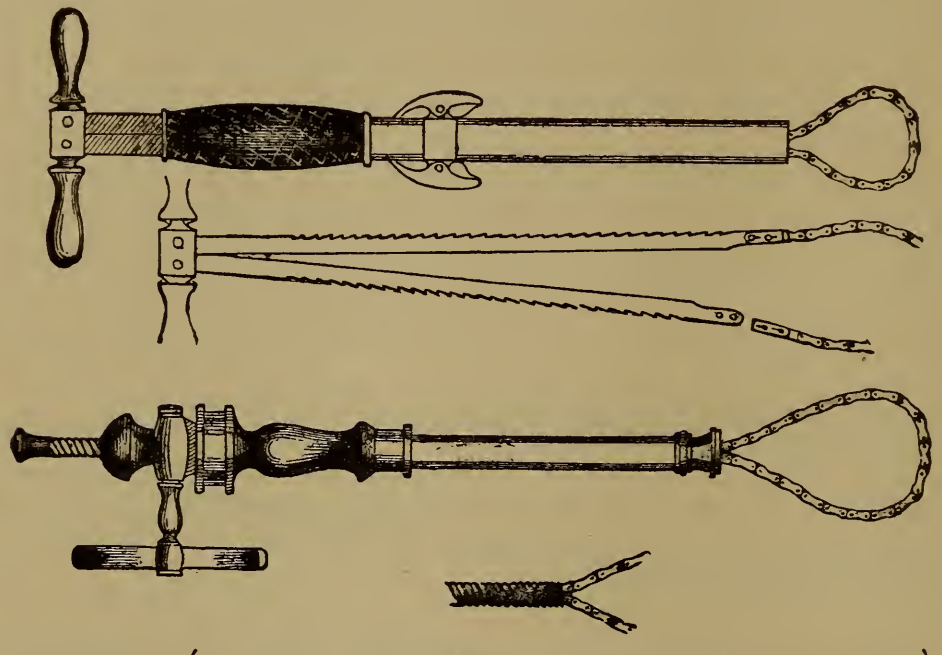
BONE FORCEPS.

Cause. A disposition in the system to appropriate to the bones more calcareous or earthy matter than is required.

Treatment. If caries be confined to the teeth, have them taken out. When confined to the bones of the head, it is incurable. The animal will die of hunger, as he is unable to use his tongue and jaws, or gather and chew his feed. Happily, it is not a common disease in the Middle States. There have been many cases in the Western States. Arsenic and the hot iron are there recommended. Better let the horse die than increase his suffering, as he will die any way.

Castration.—This is an operation for the purpose of depriving the horse-colt of his entirety by the removal of the testes. It is a simple and safe operation. Any person having once seen it done, can do it also, if he have the

resolution to do so. It has been recently demonstrated that castration can be performed on aged horses with as much safety as on those in colthood. This is attributed to the mode or manner of operation, namely, by an instrument called the *Ecraseur*. (See Instruments.)



ECRASEUR (OR NEW INSTRUMENT FOR CASTRATING COLTS.)

No clamps, no firing nor twitching, nor any trouble afterward. The instrument is manufactured especially for this purpose, by surgical instrument makers in Philadelphia.

Cataract.—(See Eye Diseases.)

Catarrh.—(See Cold.)

Cautery.—This term is applied to the operation of searing a part with a red-hot iron. Happily, this cruel, and in many instances unnecessary operation, is becoming among the things that were. It used to be applied to sprains, ring-bones, and spavins. Since the discovery of the preparations of iodine, and their absorbent properties, the iron is little used.

Cerebro-Spinal Meningitis.—(See Typhosus.)

Chest Diseases.—The diseases of the chest are many and important. In it are the heart, lungs, and great blood-vessels. The diseases of these organs will be found under Inflammation of the lungs, or Lung Fever, Pleurisy, Coughs, Bronchitis, and Glanders.

Chest Founder.—(See Founder.)

Chilblains.—(See Frost-Bites.)

Chill.—This term means a shiver, as if the horse were cold. This is the way many diseases and fevers are ushered in. If the chill be checked soon, it will stop, in many cases, the disease that was forming. For this purpose, give twenty drops of the tincture of aconite root in a wine-glassful of water, and pour down the throat, out of a short-necked bottle; cover the body with a blanket, and rub the legs to bring the circulation to the surface of the body, and all will be well.

Choking.—Choking very rarely occurs in horses; very frequently in cattle. If choking should occur in the horse, there is little chance or hope of saving his life, if he be a spirited animal, and the substance be high in the gullet. In a very extensive practice, embracing many years, I have never seen a case of choking in the horse, except on a few occasions, and then it was only a ball of aloes sticking in the throat. If a ball of any thickness stick in its passage to the stomach, and it have passed down some distance, it is called *low* choke, and is not so dangerous as if it stick in the entrance to the gullet—*high* choke.

Treatment. In low choke press down with the hand over the substance in the gullet, and try to move it. Do this not too strongly, but continue it for a time. If unsuccessful, one pint of fish, sweet, or linseed oil, melted lard, or

syrup of any kind, will be apt to move the substance on its way down. If these should fail, after a good trial, then have the gullet opened right over the substance, and take it out, and put in one, two, or three stitches, with strong saddlers' silk. Make the stitches *separately* from each other; for if this be not done, and one break, the others will also become loose.

In high choke, the irritation and excitement are great, which prevent much being done to relieve the animal. Try the oil, and see what can be done in that way. The treatment is purely mechanical, so use ingenuity to overcome the difficulty.

Chorea.—This is a rare disease in the horse, but common in dogs. It accompanies cases of madness in all animals, and depends upon nervous excitement, which is seen in the constant twitching of the muscles of the body. It is clearly sympathetic in its character.

Treatment. Removal of the cause, whatever that may be.

Cold.—*Symptoms.* Cough slight, fever, and discharge more or less from one or both nostrils, sometimes of a thin, watery material, or a thick, creamy pus. The lining membrane of the nose is red and inflamed. Cold sometimes even extends into the throat and lungs, giving rise to quickened breathing and uneasiness. When it extends to the stomach, it is called by the French *gastritis mucosa.* When it spreads to the chest, it is called bronchitis, (which see.) No disease is more common than cold among young horses; but, unfortunately, it rarely runs its course as such. Cold assumes one or more of the forms just mentioned.

Cause. Exposure to cold and stormy weather.

Treatment. In Germany, it is said that a cold, if let alone, will get well in a fortnight, and if treated by a skilful doc-

tor, he will cure it in fourteen days. However, give the animal a few doses of aconite, (see Medicines,) to remove the fever, and, if possible, to prevent complications, or its further spread to the neighboring parts. If the appetite keep good, nothing more need be done; but, on the contrary, if the breathing quicken, and the appetite be poor, and debility be setting in, tonics and stimulants will be necessary. Get the following medicine, and give one powder, morning, noon, and night, mixed with a little cold water, and drench the horse with it: Take powdered gentian root, powdered pimenta berries, powdered carbonate of ammonia, of each two ounces. Mix, and divide into twelve powders. When the appetite improves, give good feed, but not by any means in sufficient quantity to bring on indigestion. Give green feed, if it can be had. This is a most simple and successful plan of treating common cold.

Cold Lotions.—These are now called refrigerant lotions. Ice-water makes a good and economical refrigerant, when applied to a sprain. (See Prescriptions and Medicines.)

Colic.—(1.) SPASMODIC COLIC.—*Symptoms.* All at once the horse that a few moments ago was well, apparently, shakes his head—leaves his feed, looks round at his flank, mostly at the right side, as if pointing out the seat of the disease, scrapes the ground with his front foot, and almost strikes his belly with one of the hind ones. The spasm continuing, the horse breaks out into a sweat, heaving at the flanks; great excitement, kicking, and rolling; intervals of ease from pain.

Causes. Drinking cold water when heated, or colder water than commonly used, as a city horse is used to drink

ing water which is warmer in summer, and colder in winter, than water taken from a pump; washing the belly with cold water; driving horses into a pond of cold water.

Treatment. Give something to heat the stomach and bowels. Try a bottle of warm ale or porter, adding a little whiskey, or a tablespoonful of ground ginger to it. If relief be not obtained in half an hour, give a drench, composed of tincture of aconite root, twenty-five drops; spirit of turpentine, one ounce; one bottle of cold ale or porter. If necessary, give injections of warm water, (not hot,) soap, and a handful of table salt. Occasionally *walk* the horse about, to excite the bowels to action.

(2.) STERCORAL COLIC.—*Symptoms.* Similar to the above variety, but continues longer, and is not quite so severe or painful.

Causes. Impaction or constipation of the bowels.

Treatment. Powdered aloes, one ounce; tincture of aconite root, twenty-five drops; chloroform, half an ounce. Mix in a bottle of ale or porter, and give in a drench out of a horn, or stout bottle. The aconite will have to be given every four hours, till the pain has given way. Encourage the operation of the aloes by injections every hour.

(3.) FLATULENT COLIC.—*Symptoms.* Pain is considerable at first, which in a few hours gives way to sleepiness, (see Coma.) This is caused by distention of the bowels with gas, commonly called wind, thereby paralyzing the par vagus and nerve centres, and ultimately the brain itself. This variety of colic is readily distinguished from the others by the swelling of the belly, particularly at the flanks, called tympanitis, or drum-belly.

Causes. Indigestion of food in the stomach; fermentation is set up, and there is evolution (giving forth) of carbonic acid gas. This gas is not liberated per rectum from

the body as speedily as generated. The horse and cow cannot belch or eruct wind from their stomachs as man and the dog can; hence the frequency of tympanitis in horses and cows.

Treatment. Try injections first, as in many cases I have cured this variety by this means alone. If gas or wind come away with the injection, the case will soon end well. When no benefit is derived from the injections, give, in a little cold water, aloes in powder, one ounce; sulphuric ether, one ounce; tincture of opium, two ounces. If these measures fail in giving ease from pain, pour two ounces of chloroform on a small moist sponge, and hold it to the nostrils, not too closely, but admit a portion of air with the fumes of the chloroform, (see Medicines.) The sponge may be placed in a towel, and the ends carried up around the nose of the horse, to save waste; or place the sponge in the bottom of a nose-bag, and put it on the head, but not too close upon the nose.

Last Remedy. It must be confessed that the longer this disease is unrelieved, the more remote is the chance of recovery, as the bowel sometimes contracts upon itself, or nearly closes altogether. To overcome this condition an operation is recommended, which I do not say will be a success, nor yet a failure. When it failed in my hands, it was not because the gas was not let out of the bowels, but because the blood had become so disintegrated, and the nervous centres so paralyzed, that the sanative powers of the constitution had received too great a shock to ever rally again.

The Operation. Procure an instrument, (see Instruments,) called a trocar. If this be not at hand, sharpen a breakfast knife, and measure an equal distance from the haunch bone and the short rib, and not too high upon the

back ; force the knife into the distended bowel, and turn the knife in the wound thus made, and hold it there until all the imprisoned gas has escaped ; and as the gas sometimes still accumulates, keep the knife or instrument in the wound, if it be for half a day. When the knife or instrument is taken out, place a piece of sticking plaster over the wound. (See Medicines.)

Stones, or hair calculi, are often found, after death, in the bowels of horses subject to colic. I have seen six taken from one mare that I had under treatment. Remember, the great principle in the treatment of colic, in all its forms, is to relieve pain. This also holds good in most diseases of horses. The doctor, if he fail to allay pain, cannot cure the disease.

Coma.—A horse is said to be in a comatose state when in an apoplectic fit, in sleepy staggers, and when dying from spasmodic colic, (which see.)

Congestion of the Lungs.—(See Lung Diseases.)

Constipation.—A confined condition of the bowels accompanying fever, liver and lung diseases. Horses habitually costive should be supplied with soft feed and grass in season. Costiveness, as a concomitant of fever, etc., should in all cases be let alone, as it is a provision of nature to protect herself from exhaustion.

Consumption.—*Causes.* Repeated attacks of influenza, lung fever, or bronchitis, or any of these diseases treated by bleeding, and other reducing remedies or agents. Consumption, in the horse, runs its course in from one to two weeks.

Nature of Consumption.—A wasting, or breaking down of the structure of the lungs. The tuberculous form of consumption I have never seen in the horse. Tubercles

are seen in bad cases of glanders, (which see.) These tubercles suppurate, and discharge pus. This pus is absorbed and taken into the blood, and sets up a ferment, or *leaven*, as the Scriptures call it. This is the great trouble in consumption in man, and glanders in the horse. Why authors have not called this tuberculous disease in horses, consumption, I do not know, except it be, and I am inclined to believe it is, from an entire ignorance of its true pathology or character.

Treatment. Incurable. To prolong the life, beef soup, iron, gentian, tonics and stimulants, are indicated. In the tuberculous form, sulphite of soda should be given to arrest the ferment, and keep the blood clear of impurities, in addition to the remedies to support the strength. (See Medicines.) *Decay, putrefaction, fermentation,* are true and scientific expressions, with no vague meaning. Such, then, are the conditions embraced in the word *consumption,* whether in men or animals.

Contagion.—This term is applied to something (as the *virus* of glanders) coming in contact with the body of an animal in health, producing a similar disease to that existing in the animal from which it came. In a word, it is a specific poison. Few diseases of animals are considered contagious. The following diseases, however, are considered of that character :—Glanders, in horses ; contagious typhus and small-pox, in cattle and sheep. Although many animals may be taken sick one after another, this is no proof that the disease is contagious ; for it must be remembered that a number of animals, all situated and cared for in the same way, are certainly subjected to the same exciting causes that produced the disease in the first animal affected. Those that escaped the disease were not predisposed to take it ; hence their exemption from its effects.

Prevention. Separate the sick from the well. All buckets, or other materials, that were in contact with the sick, must be thoroughly cleansed and purified. (See Disinfectants.)

Contraction.—(See Foot Diseases.)

Convalescence.—A term applied to the time which elapses between the controlling of acute disease, and the restoration of the patient to perfect health.

Corns.—(See Foot Diseases.)

Coryza Gangrenosa.—This name is applied to an ulcerated condition of the membrane of the nose supervening in a case of cold. It is evidence of general debility, and disintegration or deterioration of the membrane.

Corrosive Sublimate.—(See Medicines and Poisons.)

Cough. — A *symptom* of disease of the respiratory organs, as tubercles of the lungs, thickening of the lining membranes of the windpipe, and enlargement of the glands of the neck. I have seen cough from indigestion in a few cases, but this is rare in horses.

Cough Chronic. — *Causes.* Debility, or softening of the par vagus nerves; heaves, or broken wind, (which see,) are some of the causes which produce acute cough.

Treatment. Removal of whatever is the cause, (*causa sublata tulitur effectus.*)

Counter-irritants.—An external application, which, when applied, causes an irritation or inflammation counter or opposite to that which exists inside.

Cow Hock.—This name is applied to a condition or malformation of those hocks that incline forward, thus

forming a fulcrum, over which the posterior straight ligament passes—this condition favoring a sprain of the ligament, which is called curb. (See Curb.)

Cramp.—Cramp of the stomach or bowels of horses, cannot readily be distinguished from spasmodic colic, (which see.)

CRAMP OF THE HIND LEG.—This affection is common among young horses of an irritable temperament. It is often mistaken for dislocation of the patella, sometimes called luxation of the patella, (which see.)

Symptoms. The horse will persistently refuse to move the leg from the position in which it is placed. Quivering or excitement of the muscles of the thigh, accompanied with irritation and fever. The horse cannot be moved, as he refuses to do so.

Causes. Irregularity of the nervous system.

Treatment. Move the animal, if it be possible, and the cramp will give way. Dashing cold water against the thigh will often remove it. The horse will get well, if time be only given him. Thus, if a person leave the stable to tell some one of the matter, he will be surprised, on coming back, to find the horse well.

Crib-Biting.—This is not a disease, but a vice—a bad habit, which the horse has learned, of sucking wind into the stomach by placing his lips against the manger. The habit has been so strong in some horses, that when they could get no place to press the lips against, they have stooped down and placed the lips against the arm of their own front leg. This vice is sometimes called wind-sucking.

Causes. Idleness, indigestion, and learning it from other animals in the same stable.

Prevention. Keep horses in loose boxes, or other places

where there are no fixtures but the walls; regular feed and regular work.

Treatment. Do not let the horse stand in the stable twenty hours out of the twenty-four. Feed him regularly, and work him as regularly. Turn the animal to pasture, and when he is brought home in the fall of the year, have a loose box prepared for him without any fixtures, as manger, trough, or rack. Place his hay upon the floor, and his oats or corn in a small trough, and remove it as soon as the feed is eaten.

Curb.—One of the many diseases of the hock-joint, and consists in a swelling immediately below the point of the hock-joint, and is the result of sprain of the posterior straight ligament; is more frequent in horses with the hocks inclining forwards, (cow hock.) The treatment best adapted is the ointment of the red iodide of mercury, (see Ointments,) which is not only a counter-irritant, but a sorbifacient. Apply about the size of a hickory-nut in quantity every sixth day for a few weeks, occasionally greasing or oiling the parts to prevent the skin cracking.

Curby-Hocked.—(See Cow Hock.)

Cutaneous Diseases.—(See Skin Diseases.)

Cutting.—(See Interfering.)

Death.—The great law of the universe makes limits of duration to every structure endued with life, and prepares a way for the resolution of every material provided with vital principles into matter of the earth. The individual existence of all organized bodies is merely temporary; none escape the necessity of perishing.

Debility.—This is a condition accompanying many diseases. Hence, the necessity of guarding against any

measure in the treatment, even of a disease of an exalted kind, that will reduce the strength. The animal thus affected rapidly becomes weak and debilitated to such an extent as may cost it its life.

(1.) DEBILITY, SIMPLE.—May be local, that is, confined to a part, as in partial paralysis, from the effects of a blister applied to a part, or from a kick or injury.

Symptoms. A thickening or swelling of the parts. The swelling is not inflammatory, but soft, and contains fluid. (Œdema.)

Treatment. Powdered sulphate of iron, one ounce and a half; gentian root, two ounces; chlorate or nitrate of potassa, one ounce. Mix, and divide into twelve powders, and give one night and morning mixed in cut or soft feed, with no more water in the feed than will keep the particles together. Feed the animal generously and well. Debility, and swelling of the legs of horses now-a-days, at least in the United States, can be produced by simply keeping a portion of their usual feed from them for two or three days.

(2.) DEBILITY, GENERAL.—*Symptoms.* Swelling of the legs, sheath, breast, and belly. Disturbed breathing. The horse is very weak, and easily pushed from off his feet by the hand. Indeed, he staggers as he walks, and sometimes falls to the ground.

Causes. Bleeding or giving physic (a purge) in the treatment of disease, especially in diseases of the chest. Starving and low diet given to a sick horse, when he should be supported in the midst of his sickness by good feeding. The very neglect, or want of knowledge on this point, has killed thousands of horses that would have lived, that have been sacrificed at the shrine of ignorance, error, and bad judgment. This condition of things in relation to the treatment of diseases of the horse, and indeed all our faith-

ful animals, may be ascribed to the diligence and persistence of the American publishers deluging the country with reprints of old English books that should never have been written.

Treatment. Give plenty of good feed to the maltreated animal, and give the following blood-making medicines:— Powdered sulphate of iron, three ounces; gentian root, three ounces. Mix, and divide into twenty-four powders, and give one powder night and morning. If there is much swelling about the body, add five grains of powdered Spanish fly to the evening powder, for a few nights only. Be assured the animal is fully restored before it is put to hard work.

Deformities.—In young colts will often be observed a deformity of one or both fore legs from the knee down, giving the whole appearance an awkward look. Farmers having such a colt should not think it useless, or at all impaired; for in my own extensive practice, I have not seen one that did not become as perfect as the best formed of animals.

Observe. Whether the mother have sufficient milk for the colt, and if not, teach the colt to suck milk out of a bottle, or from something else; for by good nourishment these deformed conditions of the legs will disappear.

Deuteropathia.—A disease of a secondary character, or in sympathy with another. (See Fever.)

Diabetes.—This is a disease accompanied by a great and frequent flow of urine, containing sugar in solution.

Causes. The starch, and some constituents of the food are transferred into sugar. The origin of this affection is supposed to be a ferment changing the material of the system into sugar, as diastase converts starch into sugar in malting.

Symptoms. Great flow of clear urine, very great thirst, ravenous appetite, weakness and general debility.

Treatment. Although this disease is considered incurable, I have on two occasions cured the animal by the iodide of iron, too expensive a medicine to be recommended for general use. The action of this medicine, at least the iodide portion, allayed the thirst, and the iron supported the strength and system, also acting as an astringent (to dry up).

This medicine should be seconded by good feeding and plenty of it. (See Iodide of Iron in Medicine List.)

Diaphoretics.—This term is applied to medicines having the power of producing sweating. The horse is not easily acted upon in this way by the use of medicines, except by one or two articles, as aconite or veratrum, (which see.) Slight moisture on the skin is very desirable in cases of fever. The cold water *douche* is used by hydropaths for this purpose.

When sweating is desired for the cure of disease, it must be done without increasing the heart's action. This is the great secret in producing diaphoresis.

Diarrhœa.—(1.) SIMPLE DIARRHŒA consists of a looseness, or fluid condition of excrement, from something irritant in the bowels, and which does not freely pass away. When this condition is present, and no pain, griping or pawing as in colic, it may be well let alone.

(2.) CONTINUED DIARRHŒA.—This is often the case when irritation does not pass away with the offending matter, and the bowels continue to discharge a thin fluid. There is slight pain or colic. When this is the case, suspect some irritant poison. (See Poison.)

Treatment. From whatever cause the diarrhœa may arise, treatment that will allay pain is demanded. *First.* Give

twenty to twenty-five drops of the tincture of aconite root in a little cold water. Then give the following powder every two hours, until a change for the better has taken place:—Prepared chalk, half an ounce; catechu in powder, one drachm; opium in powder, ten grains. Allow the animal plenty of water to drink, which will help to keep or allay irritation, or what disposition there may be to inflammation. Bran mashes should be given for a few days, so as to overcome the effects of so much drying or binding medicine. Cake meal, or ground flaxseed, will be an excellent assistant in this particular.

Diathesis.—When we read in medical books of the word diathesis, it means a well-marked tendency in a disease by a corresponding diathesis: for example, a cancerous diathesis or an inflammatory diathesis.

Diet.—The different articles used by the horse as food.

Disinfectants. — French, *Delsenfectants;* German, *Faülnisswidrige Substanzen.*

Disinfectants are such as remove the *causes* of infection, or any injurious taint. To accomplish this effect, disinfectants will have to embrace a class of substances known by the name of antiseptics, (agents which prevent animal or vegetable matter being decomposed,) and deodorizers, (agents which destroy hurtful or bad smells, when arising from decomposing material.)

(1.) Natural Disinfectants.—The atmospheric is the great disinfectant. The soil has been found a valuable disinfectant, decomposing animal matter with great quickness, and sending out gasses which are without taint of any kind. Hence, the necessity of deep burial of animals dying, or that have been killed, on account of contagious diseases.

Ventilation is entirely a mechanical plan of disinfecting, and which it is in the power of every farmer in the land to more or less perfect in all buildings containing horses, cattle, etc. In ventilating, it is only necessary to admit the purest air, and for this purpose have the openings, or ventilators placed at least eight to ten feet from the ground, as it is well known that heavy vapors are sometimes seen a few feet above the ground. Also, the ventilation should come from the front or top of the building, as the back of a stable is never so pure as its front.

Water is the next great disinfectant employed by nature, although moist bodies decay more rapidly than dry. It is a disinfectant by the process of washing, which is mechanical. It is in this way that each shower of rain becomes a natural disinfectant. Light is another disinfectant, which seems to have been overlooked by many, when their barns and stables were built. Without light, the rose would lose its color, and man and animals would lose and never attain their vigor.

In proof of the advantage of light in maintaining health and warding off disease, it is stated that in a barrack at St. Petersburg, there was only one case of disease on the side laid open to the light, to three on the dark side.

Heat and cold are two agents highly useful as disinfectants. Heat prevents fermentation and decay by drying and changing the chemical state of substances, as it were, by cooking, whether by fire or the sun. Cold, again, is the most powerful antiseptic and disinfectant. Frosts prevent decay and disease, and at the same time share the connection existing between them.

(2.) Artificial Disinfectants.—Creosote is a most powerful antiseptic and disinfectant, when applied to a part, but it is not easily managed. Smoke is another good anti-

septic, as it contains a little creosote. By it herring and other fish are preserved.

Spices, and other aromatic substances, have long been used as disinfectants, but they possess no such property, as they do not prevent decomposition of bodies: they merely cover the smell.

Chloride of lime and chloride of zinc act as good disinfectants.

The chloride of manganese is certainly as economical a disinfectant as can be used by the farmer. It is cheap and efficient, and not dangerous like chloride of zinc.

Sulphurous acid, or rather its fumes, has, in all ages, been used as a disinfectant, and by general consent is considered to be most valuable. Its action on animal and vegetable substances is readily seen by the change in color produced. In the form of sulphite of soda, it will arrest the vinous fermentation in cider and other materials; or if injected into the veins of dead animals, it embalms them most perfectly.

FLORENCE FLASK, used in generating chlorine gas.

For stables and houses filled with animals nothing will answer so well as chloride of lime, or McDougal's disinfecting powders, applied to the floors and excrement once per day with a large dredging box.

For empty houses chlorine gas will be found as convenient and good as any. For this purpose, procure a strong wide-mouthed bottle, fill it about half full of bin-oxide of manganese, close all the doors and windows, and other open places, then fill up the bottle with the spirits of salts, and retire and close the door. This may be repeated a few times in the course of a week. The fumes that are disengaged will penetrate

to every crevice and corner in the building. This operation any farmer can perform himself, as there is no risk whatever. The spirits of salt will have to be kept in a glass-stoppered bottle till it is wanted, as it will not only eat a common cork, but it will, by exposure to the air, abstract moisture from it, by which it greatly loses its virtue and strength. As before stated, this plan of disinfecting is only to be used when the house is empty. (See Sulphurous Acid Gas in Part II.)

Distemper.—(See Influenza and Strangles.)

DISTEMPER, CHOKING.—(See Typhosus.)

Diuretics.—A name given to those medicines which cause an increased secretion from the kidneys. Example, chlorate and nitrate of potassa, the Spanish fly, and eupurpurin. (See Medicines.)

Dropsies.—Every school boy is familiar with the term dropsy, which means an unnatural accumulation of water in the cavities of the body-chest, heart-case, belly, breast, sheath, and cellular tissue of the legs. (See Debility.)

1. When water is in the chest it is called HYDROTHORAX. This is the immediate cause of death, in pleurisy in the horse and pleuro-pneumonia in cattle, the animal dying by suffocation or asphyxia.

2. When in the belly, it is called ASCITES.

3. When in the cellular tissue, and confined to a portion only of the body, as the leg or sheath, it is called ŒDEMA; but if the swellings are over different portions of the body, it is called ANASARCA.

4. When in the heart-case or pericardium, it is called DROPSY OF THE HEART.

Causes. Treatment of diseases by starving, or low diet,

bleeding, blistering, and physicking. Injury to a part will be followed by watery swellings in the neighboring parts.

Treatment. Blood-making food and medicines, are imperatively demanded. Corn-meal mixed with bran and cut hay. Grass, if it can be had. A bottle of strong beef tea or soup, given daily, will be of great use. Give the following medicine three times a day, either mixed in the feed or poured down the mouth with a bottle: Powdered sulphate of iron, one drachm; powdered gentian root, two drachms; Spanish fly, two grains. Mix. Friction over the swelling will be of use. Sometimes it will be necessary to make slight incissions or cuts through the skin to let out the imprisioned fluid. Do not blister such swelling, as it is apt to produce ragged, running sores, difficult to heal, and leaving a blemish.

Water in the chest is removed by introducing an instrument, (see Instruments,) called a trocar, but somewhat smaller than the one used for *hoven* in cattle. Also it is removed by absorption and by diuretics, (which see.)

Dysentery.—(See Diarrhœa.)

Ear Diseases.—(1.) SMALL TUMORS.—Sometimes tumors of various shapes and sizes are seen in the ear of the horse, producing a kind of canker in that organ.

Symptoms. Shaking of the head; will not let much familiarity be made with it; running or starting back, when the collar or bridle is being taken up over the ears.

Causes. Irritation and inflammation of the skin of the ear, producing small pimples of proud flesh.

Treatment. Removal with the knife, scissors, or caustic; then apply the simple ointment as for a simple sore. (See Prescription in Medicine List.)

(2.) INJURIES OF THE EAR.—Injuries to the ear take

place from the use of the whip, the bite of a dog, or from another horse biting it.

Treatment. Treat as for a common sore, by simple ointment and by cleanliness.

(3.) DEAFNESS.—Not often observed in horses.

(4.) FOREIGN SUBSTANCES IN THE EAR.—Remove them by the forceps.

(5.) ABSCESS IN THE EAR.—*Treatment* as for Abscess, (which see.)

(6.) DRY GANGRENE IN THE EAR.—Two cases of this affection have been brought to my notice, in which the concha of the ear had dried up, withered, and dropped off.

Ecchymosis.—Black spots observed on the lungs of cattle and horses having died from pleuro-pneumonia.

Eczema.—(See Mange.)

Elephantiasis.—A name applied to a swelled leg. (See Grease.)

Embrocation.—A term applied to liniments. (See Prescriptions.)

Emetics.—Medicine, often taken into the stomach of man and some animals, causing them to vomit. The horse, ox, and sheep do not, or rather cannot vomit. Hence, *tartar emetic* has no effect upon them.

Emphysema.—This is a name signifying wind swelling, caused by the escape of air into the cellular tissue, as between the skin and the flesh, or rather the fascia and the skin. Pressure with the hand on these windy swellings causes a crackling noise or sound. This condition sometimes arises in the chest, and is attended with difficult breathing and anxiety of countenance.

Causes. Wounds in the chest, and when underneath the skin, it is caused by undue pressure on the part, causing a separation of the skin from the fascia.

Treatment. This consists in evacuating the air by slight punctures on the surface of the swelling, assisted by gentle pressure of the hand.

When in the lungs, give good feeding, and occasionally small doses of the tincture of aconite root, say ten drops, three times in the day, to relieve the breathing, until the lungs heal up.

Encysted Tumors.—(See Tumors.)

Encephaloid.—(See Tumors.)

Endermic.—A plan of treating disease by placing the medicine in contact with or under the skin. Morphia and strychnia are the agents in common use in this form of administration. (See Typhosus.)

Enema.—(See Injection.)

Enteritis.—(See Bowel Diseases.)

Enzootic.—A good name for cattle disease, as it makes the disease among animals instead of upon man.

Ephemeral.—A fever which runs its course in twelve to forty-eight hours.

Epidemic.—This term is applied to diseases of animals, but improperly, as the term is exclusively a name that should only be used for diseases when man is the subject. *Epi*, upon, and *demo*, the people—a disease upon the people. Epizootic is the proper name for animal diseases. *Epi*, upon, *zoon*, an animal—diseases upon animals.

Epizootic.—A disease that attacks many animals at the same time and season, originating in one common cause.

Examples—epizootic-influenza in the horse, and pleuro-pneumonia in cattle.

Epilepsy.—An epileptic horse should never be used for family driving. (See Megrims.)

Epiphora.—Weeping from the Eye. (See Eye Diseases.)

Epsom Salts.—(See Medicines.)

Eruptions.—Eruptions are more a symptom than a disease. (See Strangles, Surfeit, Stings of Insects, and Scarlatina.)

Erysipelas.—This, as an independent disease, is not often, if at all, seen in horses. It is often present after accidents, as a bruise or a broken bone.

Symptoms. A hard, tense and painful swelling of the parts, accompanied with irritation and excitement through the entire system.

Treatment. Give twenty to twenty-five drops of the tincture of aconite root four times in the day, to calm the system. Apply cold iced water, with woollen cloths, to the part. If, from broken bones, try and remove, or adjust them in position to one another, and secure them so with splint and bandage. In severe cases of broken bones, the animal had better be killed. (See Fractures.)

Exostosis.—(See Splint and Bony Tumors.)

Eyes, Diseases of the.—Before referring to the diseases of this organ, it may be necessary to say a few words as to the structure of the eye.

(1.) The eyelids are composed of skin, and under it the fibres of a circular muscle which close the eyelids. The eyelids are lined internally with a mucous membrane called

the conjunctiva, which is reflected from them over the anterior surface of the eyeball.

(2.) The globe of the eye is not exactly round, for it is more like a segment of a smaller circle put into a greater one.

(3.) The clear portion of the eye is called the cornea, and forms a portion of the globe.

(4.) The sclerotic coat is what is called the white of the eye; and just back of it is what is called the choride coat of the eye. And immediately within this choride coat is placed the retina, or the expansion of the optic nerve, or the nerve of sight.

(5.) The humors of the eye occupy the anterior chamber, as well as pass into the posterior. The iris floats in this humor, and behind it will be found the magnifying lens of the eye. This is a double convex, and is placed in the centre of vision, and fronting the next, or vitreous humor of the eye. This humor is enclosed in a capsule, called the hyaloid membrane. The eyes of the horse are so placed in his head, that he, at the same time, sees different objects with each eye, which peculiarity accounts for the shying and starting, when one eye is imperfect or diseased. If one eye only be altogether destroyed, the horse will not shy or start, but will be a useful animal. This is the reason why cataract on the eye of a horse had better be let alone, as any imperfect sight will make the horse dangerous to drive, objects being seen in distorted form. Better the eye be completely destroyed than partially so.

(1.) Amaurosis.—This is the same disease that Milton was affected with, and was called by him "drop serene." It is a complete or partial blindness from loss of sensation, or feeling of the optic nerve.

Symptoms. This is the most serious disease affecting the

eye of either man or horse, and is ushered in by weeping and partial closure of the eyelids. A thin film or scum will soon be observed to spread over the whole of the front of the eye. This condition will pass off for a week or two, and then return with increased violence until the sight will be entirely destroyed. Spots will be seen between each attack, deep in the eye, gradually increasing in size, till the nerve of sight is totally destroyed.

Causes. Inflammation affecting the brain, tumors, or bone pressing upon the optic nerve.

Treatment. Doubtful of cure. Small doses of *strychnine* may be tried to restore the sensibility of the optic nerve, or colchicum may be used. (See Medicine.)

Observe. There are many horses with extreme flat foreheads, the bones, seemingly pressing upon the lower portion of the brain, just where the optic nerve is given out to the eyes. These flat-headed (that is in front of the head) horses, I have observed to go blind about the seventh year of their age. Blindness arising from such a cause, may justly be laid at the door of hereditary causes. Breeding from blind mares should, therefore, be, as a rule, avoided. If a mare from accident become blind, there are no scientific reasons why she should not be used for breeding purposes. What is to be observed is, not to breed from a mare that has a very flat forehead and has not gone blind from accident or injury to the eye.

(2.) Floating Spots in the Eye.—Sometimes dark cloudy spots or specks will be seen floating in the eye, more or less movable, rising and falling, as the eye itself moves. If they are unattended with weakness of the eye, or the spots are not fixed, and dark, indicating the commencement of the disease named above, they will be no great injury.

Causes. Some constitutional disturbance, over driving, or hard work.

Treatment. Inject, or apply cold water several times in the day.

(3.) IRITIS.—Inflammation of the iris.

Causes. Cold and exposure, producing rheumatism in that portion of the eye.

Symptoms. Redness of the eye, and muddy color of the cornea. The iris is a little changed in color.

Treatment. The application of moist poultices to the eye for a few days to allay inflammation, or irritation. Then apply three times daily, with a small brush called a camel's hair pencil, the following mixture: Nitrate of silver, twelve grains; rain water, four ounces. The brush to be dipped in the mixture, and drawn lightly across within the eye. Keep the horse from the light as much as possible.

(4.) INFLAMMATION OF THE SCLEROTIC COAT.

Symptoms. The coat is of a pink-red color.

Cause. Rheumatism.

Treatment. A teaspoonful of the wine of colchicum root, four times in the day; comfortable stabling and generous feeding.

Half-drachm doses of the iodide of potassium may be tried in this case. Half-ounce doses of sesquicarbonate of soda, occasionally, will be of service.

(5.) POLYPI. Small excrescences are sometimes seen to arise from the iris, but require no treatment, as they will pass away of themselves.

(6.) SPOTS AND ULCERATION OF THE CORNEA.

Symptoms. Blood-vessels tinged with blood; small, elevated spots, which are sometimes ulcers, and at other times small abscesses, owing to the abscesses being whole or broken.

Treatment. Take belladonna, half a drachm; cold water, six ounces. Mix, and apply to the parts with a camel's hair pencil dipped in the mixture. Scarify or open the angular veins of the eye, and foment with warm water, to insure a good flow of blood. This treatment should be followed by a lotion of the nitrate of silver, or of blue stone —sulphate of copper, (see Medicines,) to destroy the ulcers inside of the eyelids; then apply the belladonna lotion as before. It will require repeated applications alternately to effect a complete cure. It will be advisable to feed the horse well, to increase absorption of effused fluids and thickenings. Iron and gentian will be useful. (See Medicines and Prescriptions.)

(7.) WEEPING FROM THE EYE.—This is more properly a symptom than a disease—a swelling of the *caruncula lachrymalis*—a small, round body.

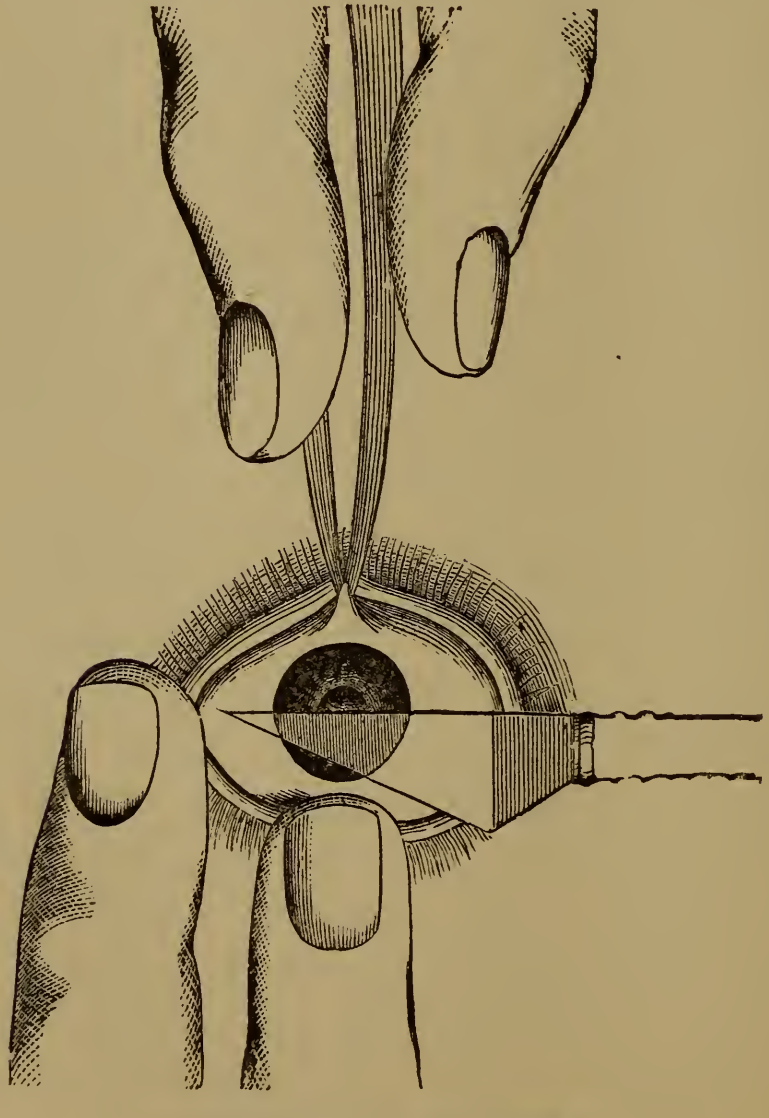
Treatment. Touch the swelling with a camel's hair pencil dipped in the lotion of blue stone, or nitrate of silver. Four grains to an ounce of rain water, will be strong enough for this purpose. This treatment will cure the weeping, provided the tear-duct be open.

(8.) CLOSING OF THE EYELIDS.—*Treatment.* Apply warm water with a sponge for a period sufficiently long, so as to dissolve or dilute the mucus, which causes the lids to stick together. To prevent a recurrence during some diseases of the eyes, smear the lids with sweet oil, or cold cream, every night while the disease lasts.

(9.) HAIR GROWING IN THE EYE.—Scientifically, this is called *Trichiasis.* The removal of the hair by tweezers, or forceps, and the application of some eye-wash to remove the irritation, are the proper means to be employed.

(10.) SWELLING OF THE EYELIDS.—This is sometimes observed in bad cases of mange, (which see.)

(11.) Simple Opthalmia, or Catarrhal Opthalmia.—*Symptoms.* A thick, mucous discharge from the eye, accompanying cases of cold or catarrh, redness and swelling of the membrane lining the inside of the eyelids. This condition and appearance resemble the lining of the nose in cases of cold. This affection may, with propriety, be called muco-purulent opthalmia, and it is not unlike the Egyptian opthalmia of man, produced by the introduction of the flying sands of the Arabian desert. Opthalmia may be simple or acute; consequently, the treatment will be accordingly.



OPERATING ON THE EYE.

Treatment. The application of cold water; or if the cold seem to give pain, warm water should be used instead. Open the angular veins. This is done as follows: Take a sharp knife, and simply cut the skin and the veins which are seen underneath at the lower corner of the eye, and bathe with warm water, which will induce them to bleed freely. Give grass, or some other opening and cool feed. Give, also, half-ounce doses of sulphite of soda daily for a few days. The nitrate of silver lotion, or the blue stone, will do; it is cheap and easily procured, and therefore better adapted for the farmer or stable man. Apply as elsewhere recommended. Never use sugar of lead lotions as an eye-wash to the eye, which books so often recommend. They are positively injurious to the eye by their producing dulness, or opacity of the cornea—or the clear, transparent part of the eye—the very brightness of which indicates health, beauty, and intelligence in a horse; so, once for all, I say, use no Goulard's solution of lead. Copper is infinitely better, and never leaves dimness of the eye or vision. If copper be not at hand, chloride of zinc, one grain, to an ounce of rain or distilled water, is an excellent application to the eye of a horse suffering from purulent opthalmia. (See Medicines and Prescriptions.)

(12.) Moon Blindness, terminating in Cataract.—This disease is a serious one, and frequent, consisting of inflammation of the internal parts of the eye-ball, the choroid coat and the iris more particularly.

Symptoms. In the morning, perhaps, the eyelids will be found closed; a large flow of tears; the back portion of the eye dim and clouded. No specks are to be seen, as in some other diseases of the eye. A yellow border will be observed at the bottom of the chamber. This is pus. The attack, or inflammation, will last from two to three weeks; at the

end of which time the eye will brighten up, and the ordinary observer may think that the eye is completely cured. The pus is entirely absorbed, scarcely leaving any traces behind, except a degree of dimness. In one, two, or three months, and not by the regularity of the moon's changes, as horsemen suppose, the disease reappears, having the same symptoms and characteristics as in the first attack, only a greater deposit of pus will be left at each subsequent attack. One attack succeeds another until the whole pupil is filled with matter, constituting cataract, thus completely destroying the eyesight. This disease is usually at first confined to one eye, but in some cases both are affected, one usually more severely than the other.

Treatment. This disease is deemed incurable, which fact has often induced the owner of an animal thus affected to sell him, being well aware that the disease will at no distant day return, and leave upon his hands a blind horse. An application of cold water and the tincture of opium should be used to allay pain and irritation; cold water, one ounce; tincture of opium, two drachms; to be applied by means of a camel's hair pencil.

Observe. When one eye of a horse is affected with this disease, the other will also ultimately become affected. To prevent this, it has been advised, as is done in man, to have the diseased eye entirely extirpated. In horses, I would rather puncture the cornea with a lancet, and allow the watery humor to escape, thus permitting the diseased eye to sink in the head. This being done successfully, the remaining eye will not only retain, but will increase in lustre and brightness.

False Quarter.—(See Foot Diseases.)

Farcy.—The reader will be not a little surprised at the

opinions that are advanced by me in regard to this disease, especially if he be a reader of the books on the diseases of horses. In these books we are distinctly told that farcy is a variety of glanders, and that farcy buds are of the same nature as the ulcers of the lining membrane of the nose in cases of glanders. This may or may not be true. But why not have given the reasons why these relations were so sustained to each other? Thus assertion is put for fact, and ignorance for great knowledge. Farcy is not a disease attacking the absorbent vessels, nor glanders of the lining membranes of the nose. Farcy, we are again told, is curable, and in the very next sentence that glanders is incurable. Why this peculiarity? For if the diseases be the same, they should be equally susceptible of cure. From all that has been said and written on the subject of farcy and glanders, nothing satisfactory has been gained, but much that is calculated to perplex. Farcy is the "scrofula" of the horse. It is unknown in countries and climes where this disease in man is never seen, and a disease inseparable from the present manner of domestication. In a word, the disease called farcy is nothing more nor less than the effects of a class of pathogens called ferments, leavens, or zumins, acting and producing fermentation in the blood. (See Glanders.) In medicines zumins are used, such as yeast, rennet, pepsin, and cow-pox matter. Among the various diseases of the horse produced by ferments, are glanders, farcy, purpura, grease, and several eruptions of the skin and legs. This is readily explained. For instance, if the liver, kidneys, skin, and bowels of a horse be not acting right, how is effete matter to be eliminated or carried from the blood or the body of the animal? This effete matter, as a small piece of membrane, dead bone or pus, not escaping by the usual channels, will decay and become an active

ferment in the blood and in the fluids of the body. This, then, is the only true explanation of the phenomena of farcy in the horse.

Symptoms. An unhealthy coat; bad habit of body; one leg, usually the fore leg, will swell to a very large size—hot and painful, and in a day or two it will break out in small, running ulcers, or sores, discharging a sanious fluid, sometimes of a thick and resinous color. On the inside of the leg, or on the side of the body or the neck, will be seen a thick, corded, and elevated substance under the skin, of considerable hardness, and interrupted at distances with a small sore similar to that on the leg. In some cases—not in every case—circumscribed, and soft, puffy swellings, will be seen about the mouth, lips, and indeed on many parts of the body. These swellings are not to be confounded with swelling of the legs, belly, breast, sheath, etc., in cases of weakness or debility. These swellings have been named water farcy by some people, but have no connection with true or malignant farcy whatever, and are not in any way infectious or contagious. After some alterations and changes occupying a few weeks, the animal becomes much changed for the worse, the blood becoming so deteriorated and changed in character that the animal's vitality soon gives way, and the horse dies a miserable object.

Causes. Overcrowding horses in small and insufficient houses, with little or no ventilation, each animal repeatedly breathing the noxious or waste material from the lungs of his companions, thus introducing into the blood a powerful pathogen in the form of a ferment; inoculation from the virus of glandered or farcied horses, the inoculation producing a ferment; debility, ending in changing the character of the blood. Absorption of pus from sores or ulcers

into the blood is another powerful ferment, and ends either in farcy, glanders, or some other zymotic disease.

Treatment. Having fully and sufficiently explained the cause of this disease, the treatment is almost already pointed out, namely, remove the cause, and the effects will cease. For this purpose give the following substance twice a day, a tablespoonful to a dose: Sulph*ite* (not sulph*ate*) of soda. This new chemical salt will purify the blood, as its action destroys fermentation, whether in a barrel of wine, cider, or in the blood of a horse. Continuing this till the horse is well, and for a few weeks afterwards, two or three times a week, will be of good service. (See Sulphite of Soda.) While the blood is thus being purified and made fit once more for the purposes of life, it will be necessary to add something to it also, thus assisting the powers of the constitution to overcome the difficulty. We will not only add to the blood, but give something to facilitate the removal of the effete matter from the body, without weakening the animal with debilitating diuretics. For this purpose, the following medicine will be given: Powdered sulphate of copper, three ounces; powdered Spanish fly, one drachm; powdered gentian root, four ounces. Mix, and divide into twelve powders, and give one powder at night in some good feed, with no more cold water in it than will keep the particles of the feed together. These powders will do for two weeks; at the end of that time get more, and continue them till the horse is well. In addition to what has been recommended, give grass, and good and generous feed, for by these means the power and strength of the body will be kept up, and a cure will be more surely and speedily effected.

While this treatment is going on, the horse will have to be removed to a place by himself, or from healthy animals.

Keep all articles used in feeding, clothing, and cleansing him, in the building with him. Remember, this is considered one of the contagious diseases of the horse. Not only the safety of your own, but of your neighbor's horse, depends upon your observance of these directions. In case you should place a horse so affected, either in a field next to your neighbor, or in his stable, and his horses become affected, you will be liable to a suit at law for damages arising therefrom. From my experience in horse causes in the courts of Philadelphia, it will be easier to bring a suit than to gain it, if there be scientific witnesses on the stand, as the question will arise, Was the disease, or was it not communicated from the sick horse so placed? Obviously, these are questions more easily asked than answered.

Fatty Tumor.—(See Tumors.)

Farrier.—Properly, this title belongs to the blacksmith, whether a horse shoer, or of other branches of iron working, *faber ferrarius;* but from some idea or other, we hear of persons, otherwise well informed, saying, when speaking of accident or sickness to horses, to have or send for a *farrier*. Now, what is there possessed by workers in iron, that they should know any more about diseases and their treatment than is possessed by a worker in wood. Persons of education should look into the etymology of a term, even if it should be used by the mass of the people: for it is by the language and general deportment, that a man of education is known from his less learned prototype.

Fever, Putrid.—(See Typhosus.)

Fever, Sympathetic.—This variety of fever is that which is produced by accident and disease. Thus, a horse gets a nail in the sensitive part of the foot, excitement, or sympathetic fever is an accompaniment. Lung disease is

accompanied with fever, and hence it is called lung fever. Fever in the feet is a common expression, signifying sympathetic fever. Indeed, it is a question in my mind, whether fevers of all kinds are not to be attributed to some local or general disturbance of some action or function of the body. Thus, the many fevers which attack the human family, can readily be traced to a predisposing cause; as, for example, typhus fever is caused by insufficient ventilation, besieged towns and garrisons, preventing the removal of *exuvia*.

Fever in the Feet.—This is a common disease of horses in large towns and cities, where the streets are paved with stone or iron, whereby the concussion is very great, when horses are driven fast. (See Founder.)

Fibroma.—A variety of tumor. (See Tumors.)

Firing Horses.—This is an operation which is a great favorite, and in much repute among horse doctors. For my part, I think it is not only cruel and barbarous, but unnecessary, doing no good whatever, and in many cases a positive injury, the effects of which will never disappear from the legs or body while the animal lives. Firing is intended by its advocates to prevent and cure spavin, curbs, sprains, and ring bones, by scoring the parts with a red hot iron in lines over the part that is thought will *be* diseased or are already so.

Fistula.—*Examples.* Fistula of the shoulder, of the poll, poll-evil, (which see,) and quittor or sinuses of the foot, (which see.) Fistulas are usually deep-seated, but sometimes they are superficial, or just under the skin. However, although we see them sometimes so situated, it must be confessed that the cases are extremely rare. The fistula most frequent and difficult of cure is always deep-seated and in the vicinity of a joint, as the poll and

shoulder. The reason of this is easy of explanation, for when these parts get injured, and suppurative action is set up, the pus, instead of pointing to the outward surface, burrows down in among the loose textures, and forms sinuses or pipes, pointing in several directions. Fistula differs from a simple abscess in this particular, and therefore is difficult of cure. The pus secreted is nearly the same. The pus in a simple abscess is secreted from, and is a liquification of, the surrounding tissue; but the pus of fistula is secreted from the walls of a fibrous sack, which is formed in most cases of fistula. The fistula may be open or whole, presenting a large swelling.

Symptoms. Pain on pressure of the parts affected, followed by heat, pain, and swelling, circumscribed in shape, hard at first, and becoming soft and fluctuating upon pressure by the finger—a sure indication of fluid within. This swelling, from the firmness and integrity of the sack and skin in which it is enclosed, does not break, nor yet form sinuses that take on the character of an encysted tumor, which does not break of its own accord, as simple abscesses do. At other times, the fistulous tumor breaks or opens in several places, and small holes discharge pus, some to-day and none to-morrow. The day the discharge is free, the pain and swelling is less. Among the pus will be observed organized matter similar to cheese, or in other words, not uniform in thickness or appearance. This is a disease that rarely ever gets well of its own efforts, from the fact of the sore having a sack, which is only removed by art; also, from the situation of fistula presenting no depending opening for the outlet of the pus.

Causes. Bruises, accidents, caries of the bones, (which see,) inflammation of the bone, or any accident that will cause a simple abscess, will cause fistula.

A blow that would produce a common abscess on some portions of the body, will result in fistula in other portions, as in the vicinity of a joint.

Treatment. If the swelling is just forming, endeavor to put it back by placing chopped ice, in a bag, over it for a few days. By this means, many a swelling which would terminate in a fistula, will be cured at once. This not succeeding, have an opening made into its lowest side, so as the bloody water, which it at this time contains, will be discharged. Then syringe a half tablespoonful of the tincture of iodine into it once in the day for a few days, to eat or destroy the membranous sack. Then treat it as a common sore by keeping it clean, and the opening from closing before it has healed from the bottom. For this purpose, place a small piece of cotton in the mouth of the opening, smeared with simple ointment. (See Medicines and Prescriptions.)

Fistula in the Foot.—This disease, by common consent, is called quittor, a fistulous abscess in the foot. (See Quittor.)

Fistulous Withers.—By farmers called Thisolow, or Fisolow. This is an affection described in the preceding article, with this difference in some cases, that it extends through over the top of the bones of the withers or shoulders to the other side, thus forming a very broad pad, as it were, on the top of the shoulder, just where the shoulder in health is the sharpest and narrowest.

Treatment. Lay chopped ice, in bags, over the swelling, and, if necessary, open and take out the sack, or destroy it by the injection of the tincture of iodine, and dress as for a common sore. (See preceding Article and Poll-Evil.)

Fits.—This is a term applied to horses subject to me

grims, or staggers, (which see,) causing them to fall. Hence, the expression, "fitty horse."

Flaxseed.—Every part of this seed is used one way or another in the treatment of diseases of the horse. The ground seed, mixed with warm water, is an excellent cooling food for horses, almost a laxative. The pressed juice, or oil, is a certain and safe purgative for the horse, in quart doses. The residue, which remains after the oil has been pressed, commonly called cake meal, when mixed with warm water, makes the best of poultices to a sore or wound. (See Poultices.)

Food, Hints on.—1. All horses must NOT be fed in the same proportions, without due regard to their ages, their constitutions, and their work. *Because the impropriety of such a practice is self-evident. Yet it is constantly done, and is the basis of disease of every kind.*

2. Never use bad hay on account of its cheapness. *Because there is not proper nourishment in it.*

3. Damaged corn is exceedingly injurious. *Because it brings on* INFLAMMATION *of the Bowels and* SKIN DISEASES.

4. Chaff is better for old horses than hay. *Because they can chew and digest it better.*

5. Mix chaff with corn or oats, and do not give them alone. *Because it makes the horse chew his food more and digest it better.*

6. Hay or grass alone will not support a horse under hard work. *Because there is not sufficient nutritive body in either.*

7. When a horse is worked hard his food should chiefly be oats and corn: if not worked hard, his food should chiefly be hay. *Because oats and corn supply more nourishment and flesh-making material than any other kind of food. Hay not so much.*

8. For a saddle or coach-horse, half a peck of sound oats and eighteen pounds of good hay are sufficient. If the hay is not good, add a quarter of a peck more oats. A horse that works harder may have rather more of each; one that works little should have less.

9. Rack feeding is wasteful. The better plan is to feed with chopped hay, from a manger. *Because the food is not then thrown about, and is more easily chewed and digested.*

10. Sprinkle the hay with water that has salt dissolved in it. *Because it is pleasing to the animal's taste, and more easily digested.* [A teaspoonful of salt in a bucket of water is sufficient.]

11. Oats and corn should be bruised for an old horse but not for a young one. *Because the former, through age and defective teeth, cannot chew them properly; the young horse can do so, and they are thus properly mixed with the saliva, and turned into wholesome nutriment.*

12. Grass must always be cut for hay before the seed drops. *Because the juices that ripen the seed are the most valuable part of the hay. If they are sucked out by its ripening and dropping, the grass* WILL NOT TURN INTO HAY; *but will only wither and grow yellow.*

13. Vetches and cut grass should always be given in the spring to horses that cannot be turned out into the fields. *Because they are very cooling and refreshing, and almost medicinal in their effects; but they must be supplied in moderation, as they are liable to ferment in the stomach if given largely.*

14. Water your horse from a pond or stream, rather than from a spring or well. *Because the latter is generally hard and cold, while the former is soft, and comparatively warm. The horse prefers soft, muddy water to hard water, though ever so clear.*

15. A horse should have at least a pail of water, morning and evening; or (still better) four half-pailfuls, at four several times in the day. *Because this assuages his thirst without bloating him. But he should not be made to work* DIRECTLY after *he has had a* FULL DRAUGHT *of water; for digestion and exertion can never go on together.*

16. Do not allow your horse to have warm water to drink. *Because, if he has to drink cold water, after getting accustomed to warm, it will give him the* COLIC.

17. When your horse refuses his food, after drinking, go no further that day. *Because the poor creature is* THOROUGHLY BEATEN. (See Humanity to Animals.)

Fomentations.—This term has been used exclusively in the application of warm water to an inflamed or sprained part, and sometimes to a sore. I may be right or may be wrong, when I say that the application of cold water to parts similarly affected, are just as much entitled to the term fomentation, for certainly it is applied the same way and for the same purpose, namely, to allay irritation in the sore or sprained part; and it has from my own experience, proved to have a much better effect, and in as short a time. Cold, applied, has an effect to brace, strengthen, and give tonicity to relaxed sprains and sores. Warmth has an opposite effect, *i. e.*, to relax and debilitate. In foot diseases, warm water will be preferable for softening the horn. Where warm water is used, the case should be treated afterwards by cold fomentations. A good way to apply cold water is by means of wet woolen cloths wrapped loosely around the parts, and wet every hour or so before the skin becomes warm. At night take all the cloths off: this will prevent scalding, and falling off of the hair.

Warm water should be applied the same way as cold.

Either cold or warm fomentations should be continued

for a time to get their benefits. It will be well to remember, that when the cloths are allowed to become dry, an opposite reaction is immediately set up. Cold is followed by increased warmth in the parts. Warmth is followed by cold. This should be well understood, for in my opinion cold applications, with absolute and entire rest, are the only and best agents for the speedy and sure cure of sprains in whatever part of the legs or body.

Foot Diseases.—(1.) CANKER IN THE FOOT.—Happily, this is a rare affection, because it is not easily managed from the peculiar tendency in the horse's foot to grow and produce proud flesh, which is the essential principle of the affection. Canker in the foot of a horse may be said to be a foot deprived of a part of its sole, in lieu of which a fungus is formed. It is difficult to keep it level with the remaining portion of the sole. Not only so, but we have to change this disposition in the foot to throw out such material, and induce the material to secrete or produce a new sole. This is the difficulty to be experienced in the treatment of this affection. Nevertheless, cases, and very hard ones, too, have been cured, but not in a day, nor a week, but months.

Causes. Injuries to the sensitive sole by nails, bruises, and other accidents, as a piece of the sole being torn off.

Treatment. Removal of any diseased or dead sole, and the proud flesh. For this purpose, the knife will have to be used to remove the dead sole, and, if it be in the hands of an energetic person, the most of the fungus or proud flesh can be taken off in the same manner. If not, get caustic potash, and quickly reduce it to a coarse powder, as it soon dissolves on exposure to the air. Lay it upon the raw surface. This apply next day, if the first application has not removed sufficient or all of it. After the proud

flesh has been entirely taken off, or leveled with the sole proper, dress every day with Barbadoes tar, one pound; sulphuric acid, three drachms; powdered sulphate of copper, half an ounce. Mix well, and spread a portion over the sore foot, and over this dressing, a pad of tow or cotton, held firmly down on the padding, so as to produce *pressure*, an important matter in the treatment of canker in the foot. This can be secured by thin pieces of splint from young wood, being placed across one another over the pad, and the ends pushed in between the foot and the shoe. By this means, and a little patience, with a little ingenuity in fixing and applying these pads, etc., even very bad cases can be cured.

(2.) CONTRACTION.—This is not so much a disease as it is bad management in the stable and in the blacksmith's shop. Contraction may be said to be an alteration of the shape and structure of the posterior, or back portion of the hoof—a winding in of the heels.

Causes. Want of proper knowledge on the part of the owner or horse-shoer in not knowing the difference between the foot that would require a piece added to it at each shoeing, and the one that requires a large portion taken from it, so as to insure elasticity and expansion. A foot strong and inelastic, and unyielding to the weight of the animal, is the very first foot to become contracted. I know flat, weak-footed horses travelling sound for ten or fifteen years without in the least being contracted. So long as we have strong-hoofed horses, and shod with an inflexible iron ring to prevent wear and tear, and the blacksmith neglects to take off of each hoof at the shoeing as much horn as the horse would have worn if he had been in the natural state and not shod, we will have contraction.

Treatment. Cut down the hoof and shorten the toe, and

make the hard and inelastic foot one that will expand at its heels every time the weight of the animal puts his foot to the ground.

One-sided nailing is an excellent preventative as well as an assistant in the cure of contracted feet. What is meant by one-sided nailing is, that nails are to be confined to the outside toe of the foot, so as to allow free expansion for the heels. This cannot be done with the shoe being nailed on by nails placed at each side. To illustrate this point, place a small horse-shoe flat in the palm of the hand with the fingers close to one another; then tie, with a piece of cord, the little finger to one side of the shoe, and the thumb to the other side; then you will realize to what extent you can expand the fingers so secured. So it is just with the foot of a horse with the shoe nailed on at each side. Remove the cord from one finger, and the whole hand is free to expand. So likewise the foot of the horse by one-sided nailing.

(3.) CORNS.—This is a red spot on the inner portion of the heel of the foot, causing lameness, and consists of a bruise from the shoe pressing upon the part, the shoes having shifted from their proper position, or never having been placed there. In general, the production of corns may be laid to the charge of the horse-shoer, and sometimes to the owner allowing the horse to go too long before the shoes are removed, or before the foot has grown from the shoes. Corn is an analogical term, although bearing no resemblance to that well-known affection of the feet of man.

Treatment. Remove the corns by cutting them out; then apply a few drops of commercial sulphuric acid to the part. Shoe the horse sufficiently often to insure even bearing to the shoe upon the wall *only* of the foot.

(4.) FALSE QUARTER.—This is a term applied to the

horn or portion of the hoof, which overlaps or bulges out from the line of the sound portion of the hoof.

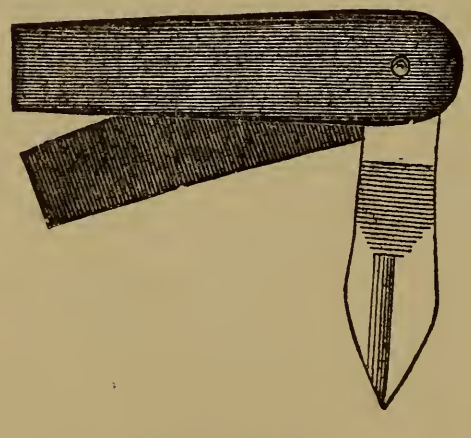
Causes. An injury to the coronet or ligament, which secretes, or from which the hoof grows. This causes an alteration of the horn of the hoof below, corresponding to the extent of the injury.

Treatment. As there will be an enlargement, more or less, remaining after an injury to the coronet, little will be required to be done, but to keep the horn as level with the hoof proper as possible, in order to make it look less of an eye-sore.

(5.) INFLAMMATION OF THE FOOT.—(See Founder.)

(6.) PRICKS.—Pricks may occur in the act of shoeing, or from a nail being picked up on the street, and from other hard-pointed substances.

Treatment. Pull the nail out, and poultice the foot for twenty-four hours; then make an opening through the horn, over the place where the nail went in, so as to allow the pus to escape. For, if this be not done, and the pus is left in the foot, it will in a few days, and at a great expense of suffering to the horse, break out between the hoof and the hair, constituting quittor. After an opening has been properly made, drop five drops of muriatic acid into the hole once a day, for a day or two. Poultice every second night or day, and not oftener. A healthy hoof can be poulticed off by constant application.



FOOT LANCET.

The horse can go to work as soon as he can step on the

ground firmly and without lameness. Remember, that in all cases of pricks and other injuries which end in suppuration, as pus in the foot of a horse, make a thorough opening so as to allow the pus to escape, and no more trouble need be apprehended; except the nail has entered into one of the tendons of the foot, in that case no pus will be usually formed, the majority of cases ending in locked-jaw, (which see). Where pus is formed after pricking, no locked-jaw follows; it is in those cases only where pus is not formed that locked-jaw may be expected.

(7.) BRUISES OF THE FOOT.—(Treat as for Prick of Foot).

(8.) SAND OR QUARTER CRACK.—This is a crack or split in the hoof, usually on the inner side of the fore foot, although splits and cracks occur in all places, and in both fore and hind feet.

Causes. A brittle condition of the hoof, from the want of sufficient moisture. In some cases the horse does not stand square upon his fore feet, thereby causing undue weight to fall upon one of the sides of the hoof and causing it to crack.

Prevention. Apply to brittle feet equal portions of the oil of tar, and cod liver oil, whale oil, or any fish oil well rubbed in with a brush to the hoofs a few times a week; and occasionally apply wet cloths to the feet in the summer season. In winter the feet are better supplied with moisture.

Treatment. Rasp the edges of the crack thin, the nearer the crack the thinner the horn should be made; this can be filled up with shoemaker's wax. After the horn has been properly thinned a piece of the wall of the hoof, for about half an inch on each side of the crack, is to be cut out to prevent any bearing of the shoe upon it, thereby preventing the constant opening, shutting, and sometimes bleeding

from the crack. To prevent, or rather to cause the new horn to grow down whole and without a crack in it, a piece of iron is to be placed in the fire and made red hot, and then applied, just for a moment, flat on the hair at the head of the crack sufficient to make a scab. This will insure a solid growth of horn. Promote the growth of the horn as speedily as possible, to facilitate the cure; a strap is used by some round the hoof to prevent opening of the crack.

(9.) NAVICULAR DISEASE.—This is a disease of a bone in the foot of the horse; a serious disease, and often very obscure in its symptoms, altogether depending as to the advanced condition of the disease. Happily, however, it is scarcely met with and then only in the common hack horse. It consists of ulceration, of various degrees, on the surface of the navicular bone within the foot.

Causes. Hard and constant work upon streets paved with stones. Slight inflammation neglected and the horse not laid up until it gets well, and then inflammation increasing, until it ends in ulceration of the bone.

Symptom. Obscure, or at least very like many of the symptoms similar to other diseases of the feet and legs. It is chiefly determined by the undue heat in the foot, and by the fact that no diseases can be detected elsewhere or of a different kind. In lameness of other portion, not in the foot, we have heat and *swelling*—the hoof or foot of the horse cannot swell. It is a box, and we cannot see into it to examine its contents and condition.

Treatment. Incurable, although much can be done to relieve the pain, by the application of moisture, poultices, and occasionally placing the hoof in warm water to soften and relieve pressure. Some have recommended a blister round the coronet. I cannot see on what scientific, or

other grounds it will do good. In well established cases, and in good strong feet, the division of the nerves which run down on each side of the leg and into the foot, will relieve the pain and the horse will go well for years. But unfortunately many cases so operated upon have lost their hoofs by falling off which have been unjustly laid to the operation. The cause of this is not so much in the operation as in the operator having no judgment as to the kind of hoof, and whether the operation would be successful or not. It would be obviously improper to recommend the operation upon a flat-footed horse, as the animal deprived of pain would let his thin soled foot come down to the ground with great force and weight, thus injuring the whole structure to such an extent, that suppuration takes place and ultimately the sloughing and falling off of the hoof.

(10.) SEEDY TOE.—This is a name given to a split in the centre of either fore or hind foot, extending a little way up from the point, or it may be up to the hair itself.

Causes. The same as those producing sand-crack, (which see).

Treatment. In bad cases a clasp or plate of iron secured by short screws. In simple crack or split from the toe upwards, cut off all communication of the sound parts with the cracked or split portion. For this purpose a three edged file will be a good instrument for making the division. At each shoeing the split portion will gradually become less or shorter.

(11.) PUMICED SOLE.—This name is used or applied to the sole of a foot, which is convex instead of concave; that is, instead of the nice cupped foot, the bottom of the saucer is presented.

Causes. The result of bad or severe cases of founder,

where the coffin bone is let down upon the sole, and causes its descent or convexity.

Treatment. This is merely palliative and is to be done by placing a shoe upon the foot that will insure and protect the sole from the ground.

(12.) THRUSH.—A diseased condition of the sensitive frog of the foot, and from which a stinking fluid is discharged, which is familiar to every person who is among horses.

Causes. Too much moisture to the foot, as from animals standing in their own excreta, or from wet stabling, the frog becoming perverted, and deteriorating, and secreting, or discharging a blackish color, and otherwise nasty fluid. It sometimes accompanies navicular disease.

Prevention. Dry stabling, a stall having sufficient inclination or drainage to carry off the fluids. Cleaning the stables regularly.

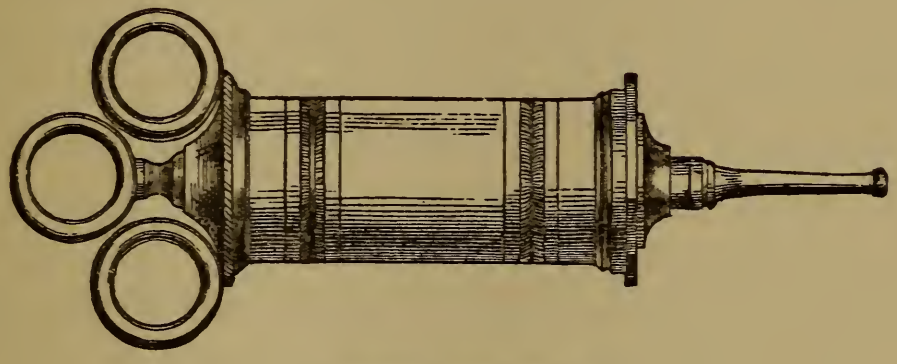
Treatment. A few drops of muriatic acid forced into the centre of the frog once a day, for a few days. Keep the stable and stalls dry and clean. A few doses of the sulphite of soda in half ounce doses, once a day, for a few days, will do good by its alterative and puritive effects upon the system.

(13.) TREAD.—This is, as its name indicates, a contused bruise inflicted on the coronet or immediately above the hoof by a tramp of the shoe on another foot, or even by another horse. Keep the wound clean, and apply the tincture of myrrh and aloes daily.

(14.) QUITTOR.—This is a serious and painful disease of the foot, of the same nature as poll-evil and fistula in the shoulder; it is known by a large swelling around or above the hoof, or where the hair joins the hoof, which soon breaks and discharges pus.

Symptoms. Horse off his feed. Considerable excitement and fever. Holding the foot off the ground, and very painful. A swelling soon shows itself at the coronet, and in a few days breaks and discharges pus. After this the horse will resume his feed, but will not make very free with his foot, which will be better to-day and worse the next day, depending upon the discharge of pus from the foot.

Causes. A prick from a nail, a bruise on the sole, a suppurating corn, or sometimes from a sand crack taking on suppurative action.



QUITTOR SYRINGE.

Treatment. The great secret of the treatment of this disease, is to make a free opening from the bottom of the foot. When this is done at once, you will be greatly surprised to see the swelling go away as quickly as it made its appearance, and if the swelling has broken, it will soon cease to discharge when the opening is made from below, or at the bottom of the foot. Having effected this purpose of an opening, get a small syringe and inject into the opening above, if there be any, and if not from the opening below, a mixture of the sulphate of zinc, two ounces; rain water, eight ounces, once in the day. If the shoe has been taken off for the purpose of making the opening, have it put on again so as to hold some soft stopping in the sole to

keep it soft. Cow dung is as good, if not better, for this purpose, than the best of costly flaxseed. Never in cases of this disease, apply poultices around the whole of the hoof, as in that case the hoof may fall off. Healthy hoofs can be poulticed off. Whatever poultice, it must be applied to the sole. If no opening has been made from below, drop ten drops of muriatic acid into the opening above, once in the day, for a few days. This will destroy the disease.

Founder.—(1.) ACUTE FOUNDER.—Every school-boy is familiar with the name of founder when applied to a lame horse, but few horsemen ever comprehend the nature and seat of this affection. Founder in all its forms is inflammation of the laminæ or leaves, which dovetail into each other, and bind the sensible and insensible portions of the foot together. Hence, it is called by some learned persons in diseases of horses *laminitis*, by adding the Greek word *itis*. Founder is again called by some persons fever in the feet. However, as to names, the disease is of often occurrence, and when left to itself, destroys many good horses by leaving them ever afterward sore and tender in *front*, as the horsemen have it.

Symptoms. The horse will scarcely move; stands upon his heels, with fore feet and legs stretched out as far as he can get to throw the weight off them. Thus, to all appearances, making the animal hollow in the breast, which appearance has given rise to the idea that the horse is chest foundered. The hind legs are brought far in under the belly. The head of the horse is erect and high. Fever and constitutional disturbance are very great. The horse is extremely excitable, and breathing fast and laborious. Altogether, the poor suffering horse is the very picture of distress and disease.

Causes. Giving cold water when overheated, and tired from overwork. A tendency in the feet to take on inflammatory action. The animal not in proper health or condition for performing heavy or fast work.

Treatment. Place the horse in a wide and airy stall, with plenty of good straw for bedding to encourage the horse to lie down, which will relieve him very much. Indeed, so much is this the case, that it has been recommended that every foundered horse should be forcibly thrown and kept down, till the active stage of the disease has passed off. This, however, I do not advise, as the horse is excited enough without increasing it by throwing him from his feet. Rather give good bedding, and the majority of horses so affected will be ready and willing to lie down of their own accord. After the place is all fixed, and the horse moved into it, give him twenty drops of the tincture of aconite root in a cupful of cold water, poured into the mouth with a bottle having a strong neck. Repeat the dose every four hours, till six to eight doses have been given. Apply cold ice-water cloths to the feet. In a few hours, possibly, the shoes can be taken off. At first, this generally cannot be done, except the animal is down. Care should be taken in removing the shoes, so that every nail is made loose before an attempt is made to pull off the shoes. Have as little hammering on the foot as possible, as it will shake the great and over-sensitive frame. Let the cold water be kept on constantly for the first day, or until the active pain gives way. At leisure, the feet can be pared thin on the soles, so they will yield to pressure with the fingers. By getting the animal to lie down as soon as possible after he gets in; the cold water cloths applied, and the aconite given; the animal in a day or two may be nothing the worse from the attack. The longer the animal

remains before these remedies are applied, the less likely is he to be free from its effects afterwards. Before the horse is again put to work, be assured he has quite recovered. During the treatment, give plenty of cold water to drink. Never give tepid water to a horse while he is sick from disease. Give grass or soft mashes for a day or two, but do not keep a sick horse too long on low feed, as debility and swelling of the legs and various portions of the body will take place.

Remember. Do not bleed, neither from the neck, nor foot, nor from any place else in a disease of this kind.

(2.) CHRONIC FOUNDER.—*Symptoms, Cause* and *Treatment* will be much the same, only it will not be necessary to push the treatment so far. Principally depend upon softening the horn of the feet, paring the soles of the feet, and a few days' rest. The horse, for a week or two afterwards, should be placed in a stall having six inches of sawdust spread over it, and kept a little moist with water poured over it once in a day. When horses are recovering from acute founder, they also might be placed in a stall so prepared. Clay stalls are objectionable.

Fractures.—This term signifies a broken bone. Fractures are the result of great force applied to the bone, as from kicks, falls, and accidents.

Fractures occur in three forms.

(1.) The simple fracture or break, either oblique, or slanting, or straight across the bone.

(2.) The compound fracture, where the bones are broken in several places.

(3.) The comminuted fracture, where the bones are broken in pieces, and the ends of the broken bones are seen cutting through the skin, and, possibly, severing some

of the blood vessels, causing, in many cases, death from loss of blood.

The first, or simple fracture, is the only variety that calls for much notice, as the other forms of fracture, when occurring in horses, are beyond remedy. Simple fracture of the following named bones may, with care, be in a great measure cured, and the animal be made useful for many purposes; as, for instance, it would be obviously wrong to have a valuable mare destroyed, because of simple fracture of one of many bones, as she would be useful for breeding purposes, if not for the farm or the road.

Fracture of the bones of the leg anywhere from the elbow down, except it may be the knee joint, can readily, with a little care and attention, be secured in its place, and the animal be made useful. So also the hind legs from the hock down to the foot. Fractures of the ribs usually get well of themselves, because they are always kept in place. So also of the haunch bone. Indeed, simple fractures of most any of the long bones will unite of their own accord, if the bones are put and kept in their place by proper fixings.

Symptoms. The symptoms of fracture of the long bones of the legs are seen at once by the looseness of the leg, the horse not having the power to move it. The leg can be turned in any direction. The horse is in great pain, excitement, sweating, etc. If there are bones pointing through the skin, the horse had better be shot.

Treatment. Place the horse, if in summer season, in the field, and in winter in the barn-yard, where there is not too much straw to prevent the foot being carried without interruption.

Then give twenty-five drops of the tincture of aconite root every five hours, for the first twenty-four hours, to

relieve pain, excitement, and fever. Take hold of the broken leg carefully, and place it in a position as near like the other leg as possible, not only in shape, but in actual length by measurement, for it is the neglect of this that some legs are left shorter and some longer after fractures. The whole position of the leg being got at, apply a good coating of tar to the leg, around, above, and below the point of fracture. Then wrap the whole leg in oakum, coarse tow, or carded cotton. Over this, place broad pieces of boards, like shingles, on the sides and front of the leg, and fill all unevenness with the tow or cotton, so the splint or boards will lay flat on the leg. Secure the whole by careful tying with broad strings or soft cords. The great secret in the successful treatment of simple fractures of the bones of the legs, is the fixing of the leg, so it cannot move until they have united. Feed the horse well, and see every day that the splints on the legs are not loose. Never sling a horse from his feet in cases of fracture, for it will be regretted. If the horse is to be kept in a stall, make a hole in the floor of the stall, underneath the foot of the broken leg, so that he can stand with the leg at full length. Bear in mind, no horse will put his foot to the ground till he is able to do so; therefore, leave everything to the broken-legged, except the matter of securing the broken bones in their place. And by giving him his feed, he may be safely left to himself, and nature will do the rest for him.

Fracture of the Hip or Pelvis.—*Symptoms.* The horse is extremely down in one of the hips, with a peculiar loose motion of the hind leg, almost giving way every step the horse makes. There are no diseases this can be mistaken for in the hind leg or hip. This fracture is produced in a moment; and even whilst the horse is trotting,

he will stop all at once as if he were shot. Fracture of the hip, I say hip—so that the unprofessional reader will better understand—but it is the bone of the pelvis. The mere name will not amount to much, for the treatment is: let it alone, and it will get well in three months of itself without any interference from medicine or art. Turn the horse out for a few months, either in pasture or in the barn-yard, and give him plenty to eat.

Fracture of the ribs will require no treatment, except it may be a few days' rest. Sometimes a swelling will be seen on the side of a horse having a broken rib, in a few days after the accident. It may form an abscess; if so, have it opened to let out the matter; and if it should not become soft and hold matter, let it alone, as it will do little harm; or, make the application for a few times, say once a week for three weeks, of the ointment of iodine. (See Prescriptions and Medicines.)

Fractures of the simple kind take place in various parts of the body, and when such is the case, and they do not interfere with any action or function of the body, they can be assisted only in so far as bandage and splint are concerned, so as to secure the ends in proper position. This will require some ingenuity, and cannot be described, as a bone is not always broken at one place, nor is it always of one set kind of break. The means will on these occasions have to meet the ends required of them in the best way possible. Sometimes pieces of broken bone will have to be taken out, where the bone has become detached. If this occur in the bones of the leg, of course the horse had better be shot. Where small pieces of bone become loose, it is usually in some of the flat bones, as the shoulder blade and the lower jaw bone, from kicks from other horses.

Fractures of the teeth take place often, and where they are very loose in the head, they had better be taken out altogether, and rasp the sharp points of the broken ones with a file or rasp, to prevent cutting the mouth when the horse is chewing.

Fungi as a Cause of Disease.—Much has been said and written of late years of minute fungi being the cause of diseases. Dr. Lassaure has made experiments with pencellum, etc., and concludes from them that fungus is not a cause, but an accidental presence. In contradiction of Hallier, and I might truthfully say of many other persons, it has been shown that nothing is to be gained in the study of the causes of disease by cultivating microscopic fungi, and it cannot be regarded as a contagious element until we have succeeded in producing disease from art.

Frost Bites.—The results of frost bites may be called chilblains, which again give rise to extreme swellings of the heels and back parts of the hind legs, until finally the skin gives way, terminating in sores and ulcers that may at once be taken for scratches. The sores are deeper in such cases than in scratches or greasy legs, but closely resemble *Phagadena*, (which see.) In the worst cases we have seen, the skin and flesh shoughed, followed by gangrene or mortification of the leg, and death of the horse from the poison thus produced and absorbed. We have seen several cases of frost bites in different stages and severities, and which, in all cases, was the result of broken and imperfect doors facing the northern exposure, and behind which stood the hind legs and heels of the horse.

Treatment. If the legs be found, on opening the stable, to be swollen and painful, rub the parts with snow or ice-cold water, then follow *gradually* with warmer water, a

degree or two above freezing; and whem warmth is restored, bathe with weak spirits. When the legs and heels break into sores and ulcers, apply, twice daily, carbolic acid (in crystals), four drachms; olive oil, four ounces. Mix.

Gangrene.—This is a name applied to, or is synonymous with, mortification or death of a part, and is characterized by a livid or black color. Gangrene is attended, or is ushered in, by a sudden giving way of pain, which has often been mistaken for recovery. When gangrene of an outward or external part takes place, there is a change in the condition of the part, it assumes a different aspect, the swelling subsides, and upon touching the part a crackling sound is produced, owing to the evolution of gas.

Gastritis Mucosa.—This is a new name to many persons, even well informed in diseases of horses, notwithstanding it is a very common one in the spring of the year, assuming always an epizootic form, and being closely allied to the epizootic catarrh, sometimes called typhoid influenza. (See Influenza.) The chief difference in the symptoms between the two diseases, being the absence of a cough, which is always observed in influenza. The one disease attacking the lining membrane of the windpipe; the other, the mucous membrane of the stomach and bowels, or in other words, the digestive organs, more than the respiratory. Gastritis Mucosa is a fatal disease, if treated by low diet, bleeding, blistering and physicking, because it always assumes a low standard of vitality, or great weakness. Hence the horse so affected, and so treated, has no chance for his life, whatever.

Symptoms. As before stated, the horse has no cough and the breathing is not disturbed. The breath and mouth is not hot nor dry, but often the mouth is slimy, and to such

an extent that it looks as if the horse were salivated. The legs soon swell, or become rounded, or filled as they are often called. The swellings are not inflammatory, nor painful; they contain lymph, or plastic matter from the blood, which disappears as it came, when the strength of the horse gets up again, and the disease subsides. The appetite is entirely suspended from the commencement of the disease. There is one of the many symptoms, which is never absent in this disease, and is very characteristic of its name and seat, and this symptom is that the fœces or dung is small, or in pellets, and covered with slime, and portions of the mucous membrane of the stomach and bowels, or what the stable-man calls "very feverish." The prominent symptom of this disease is great weakness, and this is the case, almost from the first moment of the attack.

Causes. The cause of this as well as of all epizootic diseases, is involved in not a little obscurity, and to get out of this state of ignorance, and uncertainty as to the cause, we are graciously pleased to call it *atmospheric.* This atmospheric influence, may be either electric, a poison, or a chemical element, capable of altering or changing the various parts or portions of the body most exposed to its subtle influences. However, this disease, as before stated, is peculiar to the spring of the year, commencing as the hermetically sealed earth begins to open its pores to the rain and sunshine of spring. May there not be deleterious emanations from the earth, or at least after great frost or snow, is there not during the process of thawing a *colder* air or gas given forth from the thawing process, than the animal is breathing a few feet higher up from the ground? This was one of the points entering into the celebrated controversy between myself and the distin-

gushed Professor R. E. Rogers, of the University of Pennsylvania, on the salt and slush question, a few years ago, whether it was or was not injurious to the health of man or horse to sprinkle salt upon the track to thaw the snow from them. If my argument did not prevent further use of the salt upon the track, it did some good in making it obligatory upon the railway companies to keep all gutters and inlets clear, to allow the slush to escape at once from the street. So I think, it is clearly established, that the cold emanating from the soil, during the process of thawing or breaking up of winter, are great and exciting causes, not only of this disease, but of many others in both man and beast, and which have hitherto been called atmospheric. And in connection with this condition, we have in horses, at least, a want of their usual protection, for with the warm sun of spring, the animal throws off his hairy coat, thus as it were unnecessarily exposing himself to these insidious causes of disease.

Treatment. When cases of this and other diseases of the same type (gastritis mucosa) first came under my care, I treated upon different principles and with different medicines than what is here recommended. I look back with extreme dissatisfaction on the false doctrines and false teachings of the books and the schools which have led many inquiring minds astray since their day of teaching commenced. The treatment now recommended is sound, scientific and successful, and in a very short time the horse will be at work again, as if nothing had been amiss. The first day of the disease, give, every four hours, twenty drops of the tincture of aconite root in a little cold water; next day, give the tincture of nux vomica in fifteen drops every four hours, in the same way, till the horse is well, which usually will be about the sixth or seventh day, and sometimes even

sooner. If, however, the case does not improve, and the appetite is not good, give powdered carbonate of ammonia and gentian root, each three drachms to a dose, morning, noon and night, in addition to the tincture of nux vomica. These medicines will have to be mixed with cold water, and the horse drenched out of a strong-necked bottle or ox's horn cut slanting at the mouth. Keep the ammonia in a bottle tightly corked till it is used, as it loses its strength by exposure to the air. Let the horse have as much cold water to drink as he wants; and for this purpose a bucketful should be kept before him. Pure air and good ventilation should be insured to all sick horses. Green, or soft feed should be given from the first day, if the horse will eat it. Green feed all the time of sickness will be of advantage, but oats will have to be given in addition, to support the strength and vital powers of the system, to enable him to throw off the effects of the disease. Such, then, is the manner of curing a disease which has destroyed many horses, even when treated by men calling themselves veterinary surgeons, or at least horse doctors. (See Influenza and Rheumatism.)

Glanders.—The following synopsis of a lecture delivered by Dr. McClure published in the *Evening Bulletin* will answer for the history and nature of the disease called glanders. The treatment will be made more plain for non-professional readers.

Dr. Robert McClure, Veterinary Surgeon, delivered a very interesting lecture at the Veterinary College. His subject was "Glanders in Horses." He said: Glanders is a disease dating from the time of Xenophon, or four hundred years before Christ, and we are assured by Hippocrates, (ruler of the horse) that confirmed glanders was incurable, and that it was then known by the name Proflu-

vium Atticum. Veterinary surgeons recognize two varieties of *Equinia* in the horse, viz.: *Equinia mitis*, contracted from horses with greasy heels (*Paronychia Equi*), and *Equinia Glandulosa*, a dangerous disease, and readily communicated to man. Glanders is unknown at the tropics and at the poles, and is not seen where *struma* is not a disease of the people. It is a domestic disease. The assignable causes are many, among which may be enumerated starvation, filth, and debilitating diseases, as strangles, catarrh and lung-fever, or, indeed, any disease capable of generating pus; and this pus being absorbed into the general circulation, thus forming a Ferment, a Zumin, or a Leaven, as the Bible has it, within the blood, the effort of nature to get rid of this offending matter is seen in the ulcerations of the lining membranes of the nose. The recent experiments of Professor Giovanni Polli, of Milan, seem to corroborate this view, as he has produced glanders and other Zymotic diseases in seventy dogs, by injecting into their blood in some cases fetid bullock's blood, pus, and glandered products, and neutralizing the ferment so set up by the administration of an alkaline sulphite—a new intero-chemical doctrine—on the principle of arresting the vinous fermentation set up in a vessel of cider by adding to it a preparation of lime. The experiments of this distinguished professor, enable the veterinary surgeon to extend his usefulness, and the domestic physician to snatch many a useful life from an early grave. How many brave men have stood the storm of battle in the late war—were admitted to the hospital with perhaps a shattered bone—amputation was performed, the case did well for a few days. The kind-hearted surgeon saw a change for the worse; appetite gone, the rigor and chill supervened till it was too plainly seen that the pus from the stump had been absorbed into the

blood of the unfortunate man; fermentation was set up, and death staring him in the face, there was no power to save. The discovery of a ferment and its antidote have changed the scene from death to that of life. So, likewise, with veterinary surgeons, however ignorant and slow some of them are to see and understand, it will enable them to preserve the life of many a useful animal to its owner, thus adding very materially to the happiness and prosperity of this great and prosperous people.

Glanders are recognized by ulceration of the lining membrane of the nose, or the formation of pustules, and commonly situated in the *septum nasi*. These pustules soon ulcerate and discharge pus of a greenish color, rapidly drying up when spread over the nostrils, and sinking in water, owing, as is supposed, to it containing no oil or pus cells, but principally albumen. There is one phenomenon never absent in this disease, and that is the enlarged gland under the jaw; hence, the common name of the disease—glanders. There are, said the lecturer, many wrong ideas entertained, not only in regard to the contagious nature of the disease, but also in regard to its incurability and even fatality. Glanders is no more contagious than the heavy, stinking discharge from the nose of some horses with catarrh, as the pus of an abscess on the nose of a horse with a cold, when introduced into the blood of healthy animals, will produce a ferment—which explains the reason why a cold in horses terminates in glanders; it is the absorption of the pus. This will be readily understood, when it is said the horse is running or bordering on glanders. Horses affected with chronic glanders will live and work for years, which fact, being well known, has caused dissatisfaction with local laws, prohibiting the use of glandered horses.

Fresh specimens of sections of the lungs, nose, and other portions taken from a glandered animal, were placed at the disposal of the lecturer for the purpose of illustrating to the audience, showing the morbid changes effected by the disease. At the close of the lecture, the doctor showed the manner of generating nascent hydrogen for the purpose of detecting the presence of the alkaline sulphite in the secretions of horses, under its effects, for the purpose of the cure of glanders. Before touching upon the plan of treatment, the reader is referred to the article *Farcy*.

Treatment. The proposition of restoration in a disease of this kind, is the destruction of the ferment, the removal of its products or effects, and the improvement of the bad habit of body by enriching the blood.

To remove or neutralize the ferment or poison, give one-half to one ounce doses of the sulphite of soda at night, in cut feed, for several weeks, and five grains of the powdered Spanish fly along with it, which will act not only as a powerful tonic, but as an agent whereby the product of the disease will be removed from the body of the animal by the kidneys. This treatment will not interfere with the other medicine, which is powdered gentian root, three drachms; powdered sulphate of copper, two drachms. Mix these articles, and give the whole for a dose, and give one dose morning and mid-day.

These medicines will have to be continued for a long time, not only to cure the disease, but to improve the health. The horse must be well and highly fed, and removed from other horses while the treatment is going on. Change the feed often, so as to get all the elements that the blood requires, and to keep up the appetite, for if the appetite fails, no cure can be made.

Remember. Glanders associated with tubercles of the

lungs, cannot be cured, and it then partakes rather of the nature of consumption than of simple glanders without tubercles, which is easily cured.

Glass Eye.—(See Eye Diseases.)

Gleet.—(*Nasal.*) This term is used to denote a thin, transparent discharge from the nose in cases of coryza, and as a sequel to catarrh and cold in old and debilitated horses. Whilst there are no ulcers on the lining membrane of the nose, or no enlargement of gland under the jaw, the case may be dismissed as simple gleet, which can be readily cured by good feeding and a few tonic powders, such as powdered sulphate of copper, three ounces; powdered gentian root, four ounces; powdered Spanish fly, one drachm. Mix, and divide into twelve powders, and give one powder once in the twenty-four hours. These powders will last two weeks, and can be renewed if necessary. Give the powders in large bulk or cut feed, so as to protect the coat of the stomach from the effects of the Spanish fly.

Granulation.—This means the little red portions of flesh, which grow in and fill up holes made by wounds. Sometimes these grow too fast; then they are unhealthy, being soft, and grow beyond the edges of the wound. To prevent this, sprinkle a little powdered bluestone, or a little sulphate of zinc, and the wound will soon heal level with the surrounding surface.

Gravel in the Foot.—This name conveys an impression that sand or gravel has got into the foot, which is often the case from cracks or other openings in the foot, whether from above or below. Wash out the sand, if possible; if not, remove some of the horn, and wash out well, and fill up the hole by shoemaker's wax applied hot, and smoothed over by the hand previously wet, so the

warm wax will not stick to it. If the opening be in the sole, shoe with leather soles, tar and cotton, until the hole has grown out or closed up.

Grease.—This is a disease of the heels and legs of horses, characterized by an unsightly condition of the parts. The whole being the result of suppurative inflammatory action of the skin and heels of the hind legs, usually, but sometimes of the fore ones; is more common in coarse-bred western horses, and heavy breeds, than in well or fine bred horses.

Cause. Sudden changes of the temperature of the earth, whether from heat to cold, or from wet to dry. This disease always follows sloppy or wet streets, stables or lands, producing a relaxed condition of the parts from too much moisture.

Treatment. Keep the legs clean and dry, and apply a mixture to the heels twice in the twenty-four hours. Water, one pint; sulphuric acid, two drachms; corrosive chloride of mercury, one drachm. Mix, and shake up before using. Many cases are readily cured, by simply keeping the heels clean, and anointing with glycerine, or lard, having no salt in it. It must be confessed by every body, who has had any experience at all in the treatment of this disease, that there is uncertainty of an early cure; some cases will be cured in a short time, and in others it would seem that the discharge would never dry up and be healed. For cases that prove obstinate, the following plan will effect a cure, when other vaunted remedies have failed: Take one box of concentrated lye, and dissolve it in two quarts of water, and bottle up for use when wanted, in the following way: Pour a wine-glassful of the solution of lye, into a small bucket of cold water, and wash and bathe the heels and legs for half an hour, morning and night. A great change

for the better will be seen in a day or two. This wash seems to have the power of relaxing and softening the skin, and at the same time causes the legs to sweat greatly. Dry them as often after the bathing as you like, there will pour out great quantities of moisture from the skin as soon as you have done.

SHOT OF GREASE.—This is a different disease from the one described, from the fact that it attacks only one leg, and that one of the hind ones, and comes on in a night, without any preceding symptoms whatever, and hence it is called a shot of grease. There is no cracking of the skin of the heels or legs, but it remains whole and unbroken.

Cause. Robust stamina, or too fat and full of flesh, and to get rid of this superfluity, plastic lymph is thrown into one of the hind legs, which causes swelling of the leg to an enormous size. If this material were thrown from the blood into one of the fore legs, where the nearness to the heart increases the activity of the capillary circulation, matter would not remain as it does in the hind legs, which are so far from the centre of circulation. This disease is not unlike the *phlegmassia dolens*, or milk leg in the human family.

Treatment. If the disease be observed early or before the leg becomes hard, take about *one* quart of blood from the neck, and give slop feed, that is, bran with plenty of water in it. Also, give one ounce doses of the sulphite of soda once in the day, for a few days, and bathe the legs three times in the day with the same solution of concentrated lye, as is recommended in grease, (which see.) If the swelling does not lessen in two days after these various agents have been employed, then incisions of an inch in length, through the skin, will have to be made for the purpose of letting out the imprisoned fluid before the arteries of the legs have

become *plugged* or filled up, which constitute the thick or fat leg so often seen in horses in large cities. In addition, the leg will have to be bandaged pretty tightly with a broad bandage, and be still bathed three times in the day with the solution of concentrated lye. Many good horses have been rendered of little value from want of a knowledge of this disease and its proper treatment.

Gripes.—This name is sometimes applied to colic, (which see.)

Grogginess.—A term meant to convey the idea that the horse does not travel very steady in front, from contracted or bent legs at the knee, or from soreness in the feet from a previous attack of founder in the feet, (which see.)

Grunter.—This name is applied to horses that give forth a grunting noise. One condition giving rise to wheezing, roaring, whistling, piping, and rattling, will, with slight modification, produce a grunter.

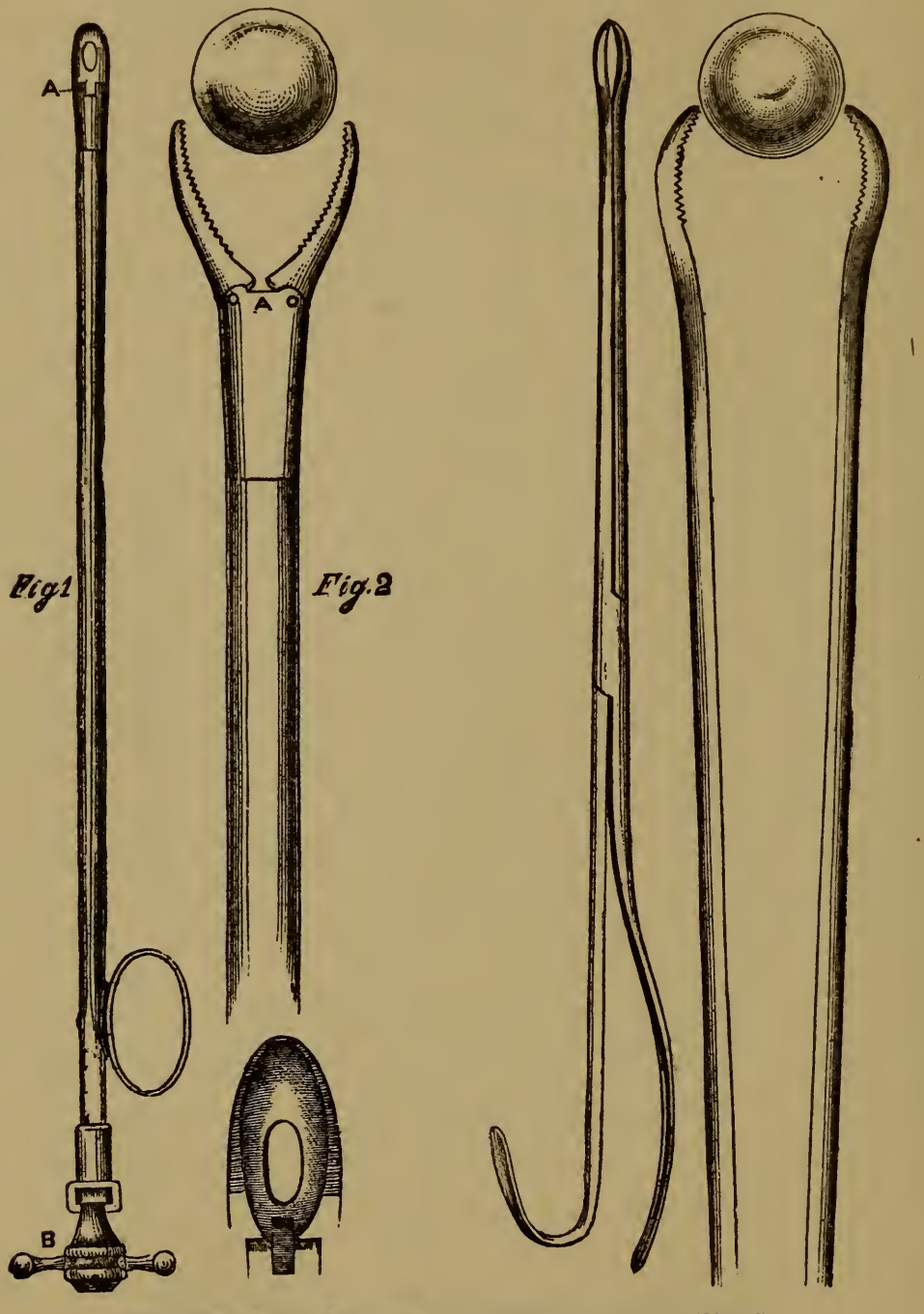
Observe. If the collar is not too tight on the neck, interfering with the free passage of air in and out of the windpipe.

Causes. Generally from some thickening of the glands of the neck, or of the windpipe—the effects of bronchitis or distemper, not treated, or improperly treated, in not supporting the strength, whereby all thickenings are taken up, or reduced and even prevented.

Gullet, Obstructions in the.—(See Choking.)

Gunshot Wound.—This is, excepting in times of war, a rare occurrence, and the treatment consists in extracting the bullet, and healing the wound as for an ordinary sore. The bullet is extracted by an instrument represented in the accompanying cut, and is called Bullet Forceps.

The instrument is represented as grasping the bullet, showing, also, the way in which it is introduced to extract the ball.



BULLET FORCEPS OF DIFFERENT PATTERNS.

Gutta Serena.—(See Eye Diseases.)

Heart, Diseases of the.—Of diseases of the heart little need be said, and as little can be done in the way of cure; so all I propose under this head is merely to name a

few of the altered conditions of the heart, which are all embraced in the sweeping term "Heart disease."

(1.) Enlargement of the heart.
(2.) Wasting or shrinking of the heart.
(3.) Foreign bodies in the heart.
(4.) Fatty degeneration of the heart.
(5.) Inflammation of the heart.
(6.) Ossification of the heart.

Such, then, are some of the distinctions made, when speaking of diseases of the heart. And as an illustration of what a horse with heart disease can do, and what can be, and is sometimes done with such an animal so affected, I reproduce articles from the *Scottish Farmer*, which may be of interest to some of our American farmers.

"If one of the busy paternity who delight in a *deal*, on a dark Wednesday night, in the grass market, were asked what sort of horse he wished to procure, as a safe investment for his ill-gathered coin, he would certainly prefer a good-looking Clydesdale, sound in limb; not a roarer, but with a *mysterious* screw loose, which few, including the horse-coper himself, can discover. Such an animal has been turned over many and many a time within the last three weeks, in or near Edinburgh."

Our readers will remember a second article on *heart disease*, in which three cases were specially mentioned, and one amongst them, under "observation." "A full-sized, active gray mare, apparently fit for a goods van, having been treated for a cold by a blacksmith, proved to be suffering from dilation of the right side of the heart. She was looked upon with interest by a strong muster of students, who hoped to see further into matters, and proposed to buy the mare, to be destroyed, as the only humane method of treating her. But, as we are informed, a friend,

seeing the animal with swelled legs *only*, thought he could cure the case, and urged that she should be sent to his farm, where he would put her to the plough. In opposition to professional advice, this was agreed upon, and the students were disappointed in getting the prize. Not many days elapsed before the farmer found that he had undertaken a hard task, in attempting to cure the swelled legs. Seven dollars and a half were realized for this likely-looking animal, and we believe a smith, near Edinburgh, was the purchaser. Here the trickery commenced, and a simple countryman greedily closed a bargain which enriched the smith by forty-two dollars and fifty cents. The animal's wind was, however, wrong, and cart-work would not suit her; so that, in despair, an exchange was effected with some of the ingenious dealers in horse-flesh, in this town. Exchange followed exchange, and it proved very troublesome to trace the animal, until at last, in broad day-light, she fell, by the auctioneer's hammer, to the lot of a man from Glasgow-side."

Many a twenty dollar note can be made out of a poor animal thus knocked from hand to hand, until, in the course of nature, it drops dead in harness. The history of the case is as interesting as would have been the *post mortem* to the students; and it will be found that one of the most remarkable features in such cases, is the length of time that animals retain a selling appearance, though absolutely unfit for any exertion.

Heaves.—This is a term in frequent use, but not so well understood as it ought to be, seeing its importance as to the proper value of an animal. Heaves, then, may be defined as a difficulty in breathing, whereby the value and usefulness of the horse is seriously impaired. There is every degree of intensity to be seen in this disease. Some

animals are so seriously affected, that it is hard to look at the terrible efforts made in the art of respiration. The deep and not suffered-to-be-completed respiration tells the tale of great asthmatic effort and oppression. In others, it is so slight that only experts can observe it; not from the quickness of breathing, nor yet from its depth, but from a peculiar double beat or hitch, differing from all other varieties of breathing, either of fever, inflammation, or debility.

Causes. Debility of the parvagum nerve; for if this nerve is divided or cut in its course, heaves, or broken wind, is set up at once. The real condition of this nerve, which gives rise to heaves, is not at present known; and it is difficult, in many cases, to trace and distinguish any alteration of the nerves, as they may retain their color, yet their influence may be greatly impaired. For two reasons I have said debility. First, because, if it was cut, or had entirely lost its influence, the animal would die in forty-eight hours. Second, because, by the administration of powerful tonics, the symptoms of the disease are greatly relieved, and in some cases they entirely disappear.

Treatment. Horse-dealers, in order to allay the symptoms, that is, the peculiar breathing, give an ounce each, of powdered sulphate of iron, gentian and ginger root. It is the largeness of the dose that is given, and repeated for a few days, that imparts a tonicity to the nerve. Although I have here spoken of this matter, I do not wish to be understood as advocating such treatment, nor as attempting to cheat or deceive any one; but the large dose of iron meets my decided disapproval, as being highly injurious to the horse—although the giving of round or spherical shot, as is practiced in England, is much worse. The treatment, whatever that may be, to do good per-

manently, must be by a gradual and progressive improvement. Five grain doses of arsenic, given once in the twenty-four hours for two weeks; then, after a week's intermission, commencing as before, will soon cure many cases. Give the animal feed in small bulk. Use as little hay, or rough feed, in large bulk, as possible. Improve the condition of the horse by every way or means, and you will relieve the animal.

Heat.—General heat of the skin indicates fever; local heat, inflammation.

Hepatic Diseases.—(See Liver, Inflammation of the.)

Hernia.—This is a name given to ruptures, (see Ruptures.)

Herpes.—A name used in skin diseases, (see Mange and Skin Diseases.)

Hereditary Diseases.—No one, of any observation, can deny that hereditary influence exists in the production of disease. This influence must not, in the production of disease, be considered as invariably reliably. The fact of horses or mares having a disease, is no reason why their young will have the same disease, also. It was through change or alteration of structure, action or function, that existed in either of the parents, that disease fastened upon them, and these same forms which existed in them are likely to be transmitted to the offspring, thus carrying the various formations of structure, which will ultimately, in all probability, produce the same disease. A great number of the affections, which are usually styled hereditary, do not make their appearance until years after their birth, because it requires time and work to develop them. Few persons would expect a horse with cow hock, (which see,) to become curbed without work, as a secondary cause.

There is one other point worthy of remark, in speaking of hereditary diseases, which is that many animals, after being poorly bred, have been badly fed and cared for; whereas if good feeding and care, had been bestowed upon them, it would have gone a long way in lessening the certainty of developing hereditary diseases in them, and their offspring. This is every day being illustrated in the family of man. There are several rules laid down to be observed as measures to prevent and modify conditions which result in producing diseases of hereditary predisposition. And there have been receipts found in the temple of Æsculapius, and said to be in the handwriting of Hippocrates himself, for the purpose of mitigating the hereditary conditions, which are so often seen in the human family. Although these rules cannot, in all cases, be applied to animals, nevertheless much can be done. The better way will be to avoid breeding from diseased animals. So long as like begets like, so long will we have hereditary diseases among horses.

Hide Bound.—This, properly speaking, is not a disease, but the symptom of a bad condition, "out of sorts," debility, etc.

Treatment. Feed in large bulk, mixed feed—cut hay, corn meal, and bran in good proportion—with no more water than will keep the particles together. Give the following powder in feed every night, for twelve nights:—Powdered sulphate of iron, three drachms; powdered gentian root, four drachms. Mix. If the animal is fat and yet hide bound, substitute the following, instead of that above recommended: Take sulphuret of antimony, three drachms; sulphur in flour, three drachms; sulphite of soda, half an ounce. Mix. and give in one dose, repeating

it every night for two weeks. If in the winter, use an on extra blanket. If in summer, give cut grass to eat.

Hip-joint Disease.—Happily, this is a very rare disease in horses, and does not make its appearance so soon as in man. It is always the result of accident or injury, and is a joint affection—not of the muscles, because the mass of muscles are so very great over the hip, that it is not an easy matter to sprain them. I speak of this here, because among horsemen it is a great bug-bear, often occurring in their ideas; whereas, in ninety-nine cases out of a hundred of their so-called hip and *whirl bone* disease, the lameness will be found in the hock-joint. Why do they jump at the conclusion that the lameness is in the hip? Because in every movement of the hock-joint, the vibration or hitch is more distinctly seen by the altered action of the muscles of the hip, as when the hock-joint moves but partially, and not completely, it is not so readily seen at the hock as at the hip. Hence, this is but the old adage, cause and effect; in this case the horseman has them reversed. (See Spavin.)

Symptoms. Lowness or falling in of the hip; a peculiar manner of moving, not indicating inability as is seen in fracture of the pelvis bone, but of great pain and difficulty; not yielding or bending low down on that quarter when the horse takes a step. The leg appears shorter, and is placed, when standing, slightly under the body, and not doubled up, or standing upon the toe as is seen in cases of hock-joint disease.

Treatment. Absolute and entire rest for a few weeks. The application of cold water cloths over the hip, taking them off at night, and applying them in the morning again. This will have to be kept up for a week, at least, so that all heat and tenderness will be removed before any irritant

can be used to the parts. (Never apply hot liniments to a part already too hot and painful.) Then apply by rubbing with the hand over the parts, every second day, the following: Oil of turpentine, one ounce; oil of olives, two ounces; creosote, one ounce. Mix. This will not only act as an irritant, but as a powerful sedative to the nerves of the parts, causing relief from pain, so that the animal can be made useful.

Hock, The.—This is an important joint or part of the horse, and is the seat of many diseases, causing lameness. In the majority of hind leg lameness, the hock is the true situation. This fact is not apparent to the non-professional person, as the hock, while diseased, does not swell so often as other portions of the body or legs when diseased. Bog or blood spavin and thorough-pin, a blind man can almost see. With these exceptions, I say, hock-joint lameness, in the majority of cases, is charged to the hip or somewhere else, simply because persons fail to see any peculiarity, even when pointed out to them. (See Stringhalt.)

Sprain of the hock-joint is to be treated with cold water cloths, for a few days, and the application of the following, once every second day, for a week, with friction or rubbing: Oil of turpentine; oil of olives; equal parts. Mix. This is a simple, cheap, and good liniment, and will answer every purpose.

Rupture of the internal and external lateral or side ligaments of the hock-joint is occasionally seen, and is caused by a violent slip. The rupture is at once recognized by the loss of power of the horse over the leg below the joint; but can stand on the leg, as if it were sound, and there is little or no swelling—which peculiarities serve to show the difference between a broken bone of the leg and the ruptured ligaments of a joint. (See Ligaments.) The cure

is accomplished by absolute and entire rest, with occasional friction with the turpentine liniment, just mentioned above. Be assured of the complete union of the ligaments —which will have taken place when the horse can bend and properly use the leg—before exercise or work be exacted.

Hooks in the Eyes.—This is a term in use by country folks when referring to the peculiar action of the *membrana nictatans* in cases of locked-jaw, (which see.) Many persons have advised that these useful membranes should be cut out. Nothing could be further wrong than this; for it is merely the effect of a cause. Rather remove the cause, or cure the locked-jaw, and the protruding of the hook or horns will cease. This is the only true plan to adopt.

Horse, Natural History of the.—The horse comes under the division vertebrata, class mammalia, tribe ungulata, order pachydermata, family solipeda.

Horse Fly.—This comprehends the gad or breeze fly, *Gasterophilus œstrus.* The spotted horse fly, *G. Equi.* The red-tailed horse fly, *G. hemorrhoidalis.* This last fly deposits her eggs on the lips of the horse, and the former glues them to the hair of the legs. These various eggs are ultimately taken into the stomach, and in one year they have become sufficiently matured that they are thrown out to the outer world to get wings, and finally fly about and propagate their kind in the same manner as the parent stock. (See Worms.)

Humanity to Animals, Hints on.—(1.) Warm the bit in frosty weather, before putting it into the horse's mouth.

(2.) Let the horse lick a little salt from your hands whenever you offer the bit.

(3.) Never startle a horse by striking him suddenly or

unexpectedly. This caution is specially important if he has a blind bridle.

(4.) Uniformly gentle treatment will secure faithful and steady work. Anger, severity, and sudden jerking, endanger your harness, your vehicle, and your life, besides permanently injuring your horse.

(5.) Be well provided with horse-blankets, particularly at night. If you are waiting for passengers, while you look out for your own comfort by a warm fireside, or in thick wrappers, see that your faithful brute companion is also protected from the chilly air.

(6.) Wash the inside of the collar frequently with castile soap suds, and when it has thoroughly dried, gently warm the leather and soak it with oil, so as to soften it. But do not allow any oil to remain on the surface of the leather, unabsorbed.

(7.) If the shoulders are tender, feverish, and disposed to chafe, they should be well rubbed, and afterwards washed with salt water. This should be done after unharnessing, so that the parts bathed may be dry before work is resumed.

(8.) Do not be tempted by extra pay to overload your team. Overloading occasions blindness, spavin, splint, glanders, farcy, and other painful and fatal disorders, and thus risks the loss of your capital, besides injuring yourself by encouraging a cruel disposition.

(9.) See that the harness fits easily in every part, and that the shoes are tight and well put on. If there are chains connected with any part of the harness, let them be well covered with soft padded leather or fur.

(10.) Let your tones, in addressing the horse, be always gentle, soothing, and pleasant. Pat him often, and encourage every sign of attachment that he gives.

(11.) Every truck, or other vehicle, should have a prop stick hung to the shafts, to relieve the burthen of the load whenever the team is standing.

(12.) Curry, rub, and clean WELL and thoroughly, *at least*, once every day. The effect is worth half the feed. A dirty coat and skin, when the animal is deprived of exercise in pasture, and of rolling on the grass, cannot fail to produce disease.

(13.) Never use a check rein. It is a false taste that thinks a horse more beautiful when his head is fastened in an unnatural position. The bearing rein keeps a horse in a constant fret, makes him restless and uneasy, and often prevents him from recovering himself in case of a stumble or fall.

(14.) Your stable should be perfectly level, or *very* slightly inclined, well lighted, well drained, well ventilated, and well protected from draughts, and from extremes of heat and cold. Keep the crib clean and free from dust, and keep the hay and other fodder as far from the stall as possible, so as to be away from the steam and breath of the animal.

(15.) If you use ground feed, remember that at many of the mills and stores it is adulterated with marble or plaster of paris, or with the sweepings of canal-boats and barges. Such adulteration not only robs your animals of nourishment, but produces *stone*, and shortens life.

(16.) If you suspect adulteration, you can sometimes detect it by heating a portion of the feed to a red heat, in an iron vessel. After the whole has been reduced to ashes, if they contain plaster, the ashes will soon *set* or harden, after being mixed with water to the consistency of paste.

(17.) In hot weather, keep a wet sponge on the head of the horse or mule; cool the mouth and face with wet

sponges; furnish drinking water often, and sponge the legs and such parts as are liable to chafe by perspiration or otherwise; drive slowly, and lessen the weight usually imposed in cooler weather; see that the harness is not unnecessarily cumbersome and heavy; the discomfort may be materially relieved by taking off the eye-blinds, which are useless appendages, and cause much annoyance to the animal.

(18.) Do not urge your beast beyond a walk when the heat is oppressive; finally, use a head-shelter or awning, constructed of wire and covered with canvass, which can be attached to the animal's head without materially adding weight.

(19.) In icy weather keep your animal sharp shod, renewing the sharpening as often as the shoes become blunt. A few dollars expended in this way will undoubtedly save your horse from serious injury, and, perhaps, from loss of life.

(20.) Standing on fermenting manure softens the hoof, produces thrush, and brings on lameness. Keep the litter dry and clean, and cleanse the stall thoroughly every morning.

(21.) Sharp bits make the mouth tender at first, and afterwards callous, so that the horse becomes unmanageable.

(22.) If your horse kicks and plunges on mounting, look to the stuffing of your saddle, and see if it has become hard and knotty with use.

(23.) Keep your wheels well greased, and thus reduce the labor of drawing the load.

(24.) Keep the feet well brushed out, and examine every night to see if there is any stone or dirt between the hoof and the shoe. Change the shoes as often as once a month.

(25.) Disease or wounds in the feet or legs soon become dangerous if neglected.

(26.) When a horse is hot and fatigued from labor, walk him about till cool; groom him quite dry, first with a wisp of straw, and then with a brush; rub his legs well with the hand, to remove any strain, soothe the animal, and detect thorns and splinters; and give him his grain as soon as he is cool, dry, and willing to eat.

(27.) On the evening before a long journey give double feed; on the morning of starting give only half a feed of grain, or a little hay; on the road feed in small quantities about every two hours.

(28.) When horses are long out at work provide them with nose-bags and proper food. The nose-bag should be leather at bottom, and of basket-work or open texture above. On coming home give a double feed of grain.

(29.) Lead the horse carefully into and out of the stable. Accustom him to stand quite still till you are seated. Start at a walk, and go slowly the first and the last mile.

(30.) Never use the whip if you can help it. It will then always be available as a last resource.

(31.) Be always on your guard, just feeling the mouth with the bit, lightly and steadily.

(32.) If a horse shies, neither whip him nor pat him, but speak encouragingly, and let him come slowly towards the object.

(33.) If you value your own life, the lives of others, or your horse, never drive fast in the dark, or in a town.

(34.) Never add your own weight to a load that is already heavy enough. Get out and walk when you ascend a hill. If you stop on a hill, put a stone behind the wheel.

(35.) Never tease or tickle the horse.

(36.) Don't forget that old horses, like old men, lose their teeth and their chewing abilities; therefore, bruise

the oats and corn, and chop the hay for the old nags who can't get "store teeth."

Hydrothorax.—This is a name given to water when it accumulates in the chest. Hence, hydro, water; and thorax, the chest.

Causes. Debility from the effects of inflammation of some of the organs within the chest.

Treatment. Tonics to improve the general health, and medicines to draw off the water by the kidneys and bowels. An operation is recommended by which the fluids are drawn from the side by means of a trocar. (See Dropsy.)

Hydrocele.—A collection of fluid in the scrotum of stallions.

Treatment. Paint the scrotum with the tincture of benzoin or iodine. If these remedies are not successful in causing absorption of the water, the skin of the scrotum will have to be opened to let out the fluid.

Hydronemia.—A name used when speaking of the blood when it contains too much water—water in the blood. (See Dropsy.)

Hydrophobia.—This disease, happily, is rare—in a practice of thirteen years, and doing much in the treatment of diseases of horses, and being well acquainted with the practice of other persons, I can only record three cases, and one of these was a mule. This disease is sometimes called *water dread* and canine rabies, from the fact that it is only generated in the dog and feline species of animals.

Cause in Horses. Bites of the mad dog, and sometimes the bite from the common cat is capable of producing the disease.

Symptoms. In those cases that came under my notice,

the symptoms were anything but like each other. In one animal, the propensity to bite at objects was more severe; and in another, the horse would walk and look about him, utter a peculiar sound, and lie down and get hold of the heels and part of the arm of the fore leg with his teeth, till he had them bleeding, get up again, and walk about without any apparent object in view. But the destructive impulse attributed by some authors, I think, is merely the fancy of an inexperienced mind in such matters. The symptoms of the mule differed from each of the horses, inasmuch as he would, at times, eat hay very ravenously, stop all at once, and with a peculiar sound, not like the bark of a dog, but of a character which cannot be described, lie down and have a good roll to himself; then he would run at any person within his reach with open mouth. But in no instance did any of the cases attempt to bite at anything not endowed with animal life. All of these animals were confined in enclosures from which they could not escape. They lived about thirty-six hours after the active symptoms of the disease set in. (See Bites of Mad Dog.) Any person having the least experience with horses, may observe peculiarities, at times, which do appear not to belong to common diseases.

Hypertrophy.—This name means a state of certain organs increased in size, and decreased in power. The heart, kidneys, spleen, liver, and other parts of the body, are liable to this disease.

Hypodermic.—Under the skin. (See Endermic.)

Hysteria.—This is a disease which is sometimes seen in *mares* only.

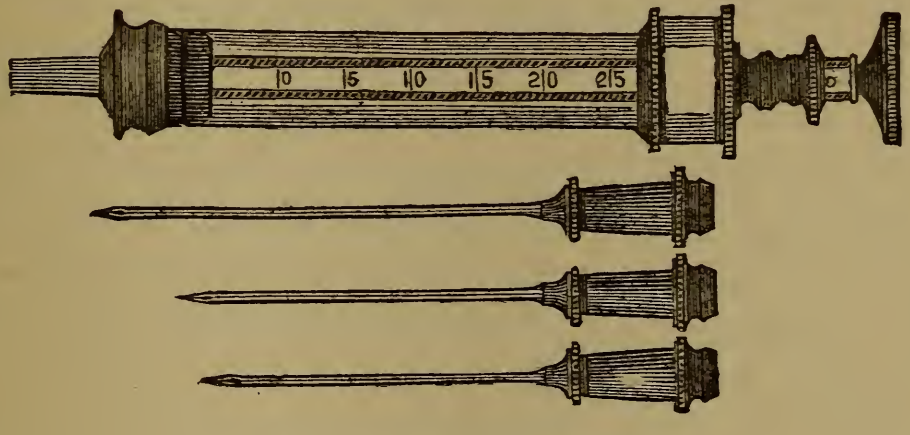
Causes. Irritation of the uterus, or of some of its nerves.

Symptoms. Great excitement and incapability of standing,

and it appears as if some of the bones of the back or loins were broken.

Treatment. Give twenty drops of the tincture of aconite root every four hours, whilst the symptom lasts. Build up the strength of the mare by the following: Sulphate of iron, three drachms; gentian root, three drachms. Mix, and give in one dose every day, for a week or ten days. Give good feeding.

Caution. Unsafe to use; will return again.



HYPODERMIC SYRINGE.

Indigestion.—However much man, in the sedentary walks of life, may be the subject of this disease, the horse with a task-master is comparatively free from it. Cases do occur, occasionally, in our large cities, where in too many cases the horse is left standing in the stable, twenty out of the twenty-four hours. Idleness begets indigestion, and indigestion begets crib-biting, or wind-sucking, and between them the poor horse looses flesh, condition and spirit. (See Crib-biting.)

Treatment. Send the horse to pasture, and when he returns give him regular feed, and regular work to prevent a return of it.

Infection.—(See Contagion.)

Inflammation.—Inflammation of the various portions or parts of the body will be found treated of under the name of the organ or part affected.

Influenza.—This is a name which is properly applied to an epizootic catarrh of frequent occurrence in the spring of the year. Indeed, it is very rare that we see a cold run its course as such, without some complication of one kind or another.

Symptoms. A chill or shivering fit, succeeded by increased heat of the body, with fever and irritation. Loss of appetite, cough, discharge of mucus from the nose, watering of the eyes, great prostration of strength, followed in a day or two with swellings of the legs, and in bad cases, of the belly, breast, and in males, of the sheath; such is a true and succinct account of the symptoms of this disease. The symptoms will vary, as in other diseases, with the intensity of the affection.

Causes. A subtle poison in the air, sudden changes in the dryness or moisture of the earth's surface, easterly winds, cold accompanied with dampness in the air. These are conditions which too often accompany or precede influenza, which differs from an attack of common cold, chiefly in the severity of its effect, causing more fever and greater debility. In England it was first observed in 1819, and again in 1832, and more or less ever since. In the United States it first manifested itself in 1856, and is still seen every spring and fall with symptoms more or less severe.

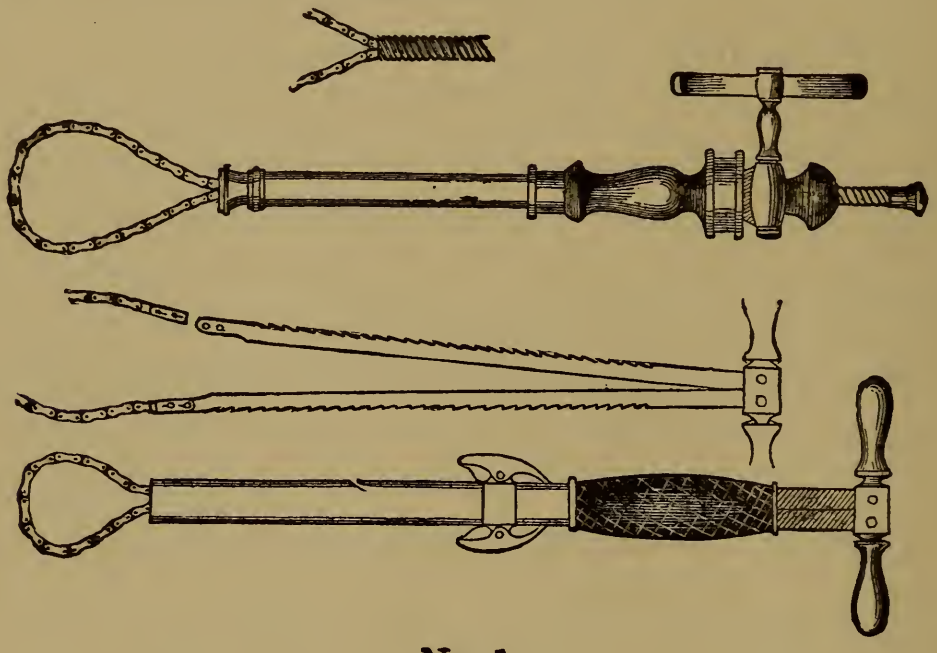
Treatment. The mortality in this disease is great, when treated according to the books which our publishers frequently issue—old English books, with new dresses cut to the fashion. Bear this in mind, when undertaking the treatment of a disease of this kind, that one step wrongly taken can never be recalled. Place the horse in a cool

(not cold) and airy place, put a light covering upon him, and give him twenty drops of the tincture of aconite root in a little cold water, every four hours, till five doses are given. Place plenty of cold water before the horse so that he can drink as much as he wants. When the aconite has been all given, commence with fifteen-drop doses of the tincture of nux vomica, which repeat every four hours, continuing it for a few days, and if the animal improves, and the appetite returns, nothing more in the way of medicine need be given. Recovery being slow, and the appetite poor, give the following powders, morning, noon and night: Powdered carbonate of ammonia, three ounces; powdered gentian root, two ounces; powdered pimenta berries, two ounces; mix, and divide into twelve powders, and give them mixed in a little cold water, and drench the horse out of a strong-mouthed bottle. The powders will have to be wrapped well, so as to keep them from the air, and prevent the loss of their strength. Twenty drops of commercial sulphuric acid may be given occasionally, in half a bucket of cold water, which the horse will readily drink. Do not apply blisters or anything to the throat, as is too often done; they can do no good, but positively much harm. Be assured the animal has fully recovered its strength before putting to work. If treated in the manner described, in from five to six days the horse will be almost well again. (See Gastritis Mucosa, and Rheumatism.)

Injections.—These are composed of warm water, soap, and a handful of table-salt; the water about luke-warm. The usual way to give injections, is by means of a large syringe, capable of holding a quart of the fluid. The diseases which call for injections, are the various varieties of colic. Few medicines will cure colic without the aid of

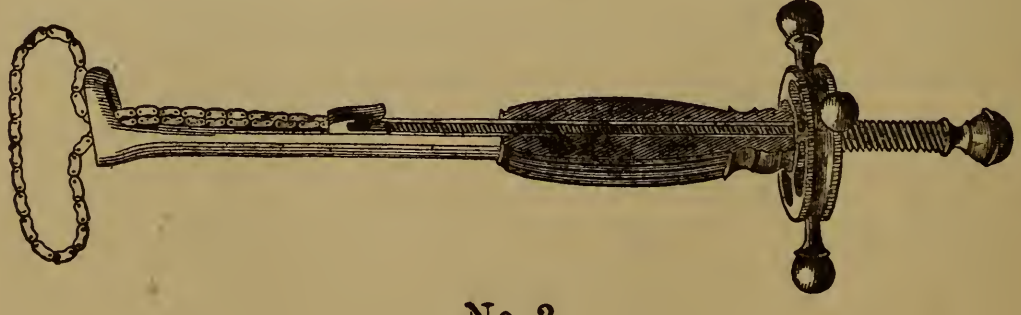
injections; whereas, colic, in very many cases, can be readily cured by the injection alone. Therefore, never put confidence in any person who undertakes to cure colic, without injections of warm water, soap and salt.

Instruments.—The various cuts of instruments, represented throughout the book, explain themselves. The few here given, may be explained as follows:



No. 1.

Above are shown two patterns of the ecraseur manufactured in Philadelphia for use in the University of Pennsylvania, veterinary department.

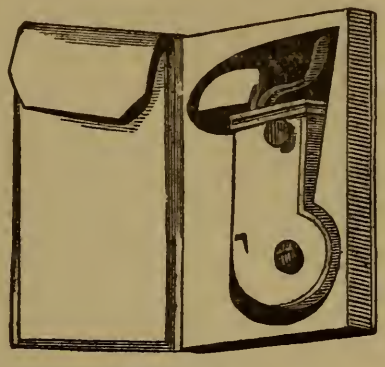


No. 2.

This is a very good representation of a similar instrument which is also manufactured in

Philadelphia. The ecraseur is now extensively and successfully used for castrating colts, and for the removal of tumors. The object of using this instrument is, that *no* bleeding follows its use. (See Castration.)

No. 3, is a spring lancet, and was invented by a Mr. Weiss, of London, for the use of farmers who could not use its more surgical prototype, the lancet. This was at a time when bleeding was thought to be the great *panacea* for all the ills and aches to which man and beast is heir.



No. 3.

No. 4.

No. 5.

No. 6.

No. 4, is a small syringe, used for injecting medicines into the cavities of tumors, to destroy their diseased walls.

No. 5, is a curved trocar and canula, and is used for piercing dropsical swellings and tumors, to run off the fluid. The trocar is drawn out after the parts have been

pierced, and the canula remains as a tube, whereby the water escapes.

No. 6, is a straight trocar with canula, and is used in different sizes and for various purposes. Its first and most important use is for piercing the rumen of cows and oxen when attacked with hoven. Second, it is used occasionally for piercing the horse, in cases of flatulent colic, and in drawing off the fluid or serum accumulated in the chest from disease of the lungs and pleura. Third, a small size of this instrument is used in piercing the head of sheep affected with hydatids. After the trocar has entered the hydatid sack, the trocar is pulled out, the canula remains, the point of a small and well-packed syringe is placed in the head of the canula, and the suction-force draws the fluid into the syringe, and the small cysts into the canula—which can be caught and pulled out by means of a pair of forceps. A trocar and canula should be kept by every farmer who has a cow or an ox.

Intestines.—Introsusception, or an entangling of the intestines, sometimes takes place in horses, and proves fatal.

Causes. Bowels empty, and the horse being driven fast.

Symptom. When the horse comes in, he is observed to be uneasy—lying down, pawing with his feet, following closely the symptoms of colic. The difficulty, or impossibility of procuring relief, is only seen on examination, after the horse is dead. (See Bowel Diseases.)

Itch.—(See Mange and Skin Diseases.)

Interfering.—This name is in use when speaking of a horse hitting himself on the inside of the pastern joint, either on the hind or fore leg. Sometimes it is called cutting. It is usually done with the side of the opposite foot.

Causes. The blacksmith is many times wrongfully blamed for want of attention or skill in shoeing the horse, because he interferes. There are cases, no doubt, where a little observation and care, on the part of the shoer, would have prevented it. From much observation, however, I am satisfied that the chief cause lies in the *weakness* of the horse, particularly in the spring of the year. Horsemen well know that their horses did not interfere in the winter months, when the weather was not oppressive, and the horse in excellent spirits; and no changes have been made in the shoer or manner of shoeing.

Treatment. Give a few powders of iron and gentian in the feed, to restore the horse to strength. (See Medicines.)

Jack.—A small point on the inside of the hock-joint of the horse, affected with bone spavin.

Jaundice.—This signifies bile in the blood; biliary intoxication, tinging the membranes of the nose, mouth, etc., with a yellow color.

Joint Diseases.—The diseases of the various joints in the horse, are many. Among them may be enumerated: Of spavin—bone, blood, bog and occult—four varieties, all of the hock-joint; of the patella, in the form of dislocation; of the hip, or whirl-bone joint, ulceration and sprain; of the joints of the back-bones, caries and ulceration; of the foot, coffin-joint, commonly called navicular-joint, lameness; of the pastern joints, anchylosis or stiff-joint; of the lower pastern, ring-bone; of the knee-joint, stiffness and open joint; of the point of the shoulders, ulceration and bulging out of the capsular ligament of the joint; wind galls, of almost all the joints, more specially in the pasterns. The cause and treatment of these affections will be found under their proper heads, throughout the book.

Jugular Vein, Inflammation of.—This may be merely a simple swelling, after bleeding, caused by bruising the parts, by too great force applied when bleeding, or by closing the wound too tightly, causing extravasation of blood, between the skin and the fascia. Inflammation of the jugular, may be of great magnitude, involving that vessel the whole length of the neck, above and below the wound made by bleeding, ultimately causing its entire obliteration. And, occasionally, the inflammation extends to the brain itself, destroying life. Happily, bleeding is not now recommended in the treatment of disease; consequently, this affection will be among the diseases of the past.

Treatment. Remove the pin, or whatever has been used to close the wound, and apply a piece of blue-stone to the bleeding sore; this may be used once a day, for a day or two. Hot fomentations, or a small poultice, should be applied to the part, to abate the inflammation or irritation. The fomentation will have to be applied, the whole length of the thick corded vein, to cause its relaxation. Cut the feed for the horse, so as to save the movements of the jaws, thus giving rest, as much as possible, to the parts affected.

Kidneys, Diseases of the.—The most important of which is that already described under the head of diabetes, (which see.) Hæmaturia or bloody urine is occasionally seen in horses, more frequently in cattle, and consists in a diseased state of the kidneys, from violent strains or accidents.

Calculi, or stone in the kidneys, are often found in the kidneys of horses, and cause considerable irregularity in making water.

Treatment. Occasionally give thirty to forty drops of muriatic acid, in a bucket of cold water, to drink.

Bloody urine may be treated by warm-water cloths, laid

over the back or in a situation above the kidneys. Use flaxseed tea as a drink, to soothe the parts. Give no saltpetre or other medicine.

In old horses, as in old men, considerable chronic disease of the kidneys exists. Although little can be accomplished in the way of cure by medicines, a great deal can be done to soothe the parts, by soft and soothing feed and drink, such as steamed or boiled feed and flaxseed tea, cut grass and other green feed, with plenty of cold water, at all times, to drink. The more fluids that go into the body, the less irritation of the bladder and kidneys. (See Bladder Diseases.)

Knees Broken.—(See Broken Knees.)

Knee Joint, Loose Cartilages in the.—Small loose cartilage is sometimes found floating in the knee joint of horses, as well as of man, and is the cause of much of the obscure lameness that is so often unaccounted for, and, so far as I am aware, has never been noticed by other writers. The lameness is very sudden, and passes off as if nothing had happened, constantly coming and going.

Treatment. Remove the body from the joint by first getting it into a corner, and holding it there, and cutting and taking it out; this is too dangerous an operation for every person to undertake, as it is cutting into a synovial cavity.

Knuckling.—This is a peculiar loose double action of the pastern of the hind legs, and is a symptom rather than a disease of itself.

Cause. Disease in the hock-joint, and weakness in the part from the effects of sprains, or other injury. It also accompanies occult and bone spavin.

Observe. Knuckling of the hind pasterns is a symptom

strongly indicative that the animal has had an attack of paralysis or is likely to have one: at all events it clearly shows that either the brain or spinal cord is to a certain extent diseased, resulting in loss of motive power in the pasterns.

Treatment. Feed the horse well, and give fifteen drops of the tincture of nux vomica three times in the day. If the hock-joint be the cause, treat the hock as for spavin, or palliate the symptoms by applying two parts of olive oil, and one part of creosote and oil of turpentine, two to three times in the week.

Lameness.—Lameness occurs in many ways, and from many causes, such as fractures, bruises, sprains, wounds or injuries, all of which will be found treated of, under their various names, through the book.

Laminitis.—A name in use by veterinary surgeons when speaking of founder, and is a generic term from *lamina*, or leaf—which forms the bond of unity between the sensible and insensible structures of the horse's feet, and is the seat of the disease commonly called founder. (See Foot Diseases.)

Lampas.—This is a name applied to a slight enlargement, swelling, or fullness of the bars of the mouth of young horses from the changes of teething. Pinching the skin of the bars with the nail of the thumb till they bleed, and rubbing in a little table salt, is much better than burning the mouth with a red hot iron—the effects of which the animal never forgets nor forgives, as is shown in any attempt to do anything about his head.

Laryngitis.—This is a disease or inflammation of the upper portion of the windpipe accompanied with fever,

increased breathing, and cough. The cause and treatment of this disease will be the same as for bronchitis, (which see.)

Leg, Fractures of the.—(See Fractures.)

Lice.—Lice of various kinds are often the source of much trouble amongst horses kept in the vicinity of hen or chicken houses.

Symptoms. Uneasiness, rubbing, and scratching; stamping with the feet and biting at the legs, as if something were annoying him.

Treatment. Take of the liver of sulphur, one ounce; cold water, one pint. Mix, and apply with a hard brush to but a portion of the body at a time. If that is not effectual, get bi-chloride of mercury, thirty-two grains; cold water, one pint. Mix, and apply with a brush to a portion *only* at a time, or a piece of the body every day, till all has been gone over with the brush. This is very weak, and can do the horse no harm.

Ligaments.—These are strong, fibrous substances, which bind together the different bones of the body or skeleton. There are two great classes of ligaments: the rounded, or the lateral, and the capsular, or sack-like ligaments, as of the shoulder and hip-joint.

Lipoma.—A variety of fatty tumor. (See Tumors.)

Liver.—The liver is the largest secreting gland of the body, situated within the short ribs on the right side. Its function is the secretion of bile—a yellow alkaline or soapy fluid.

Without the liver, digestion and animal heat cannot be maintained, and the waste or effete matter cannot be removed from the blood. So, therefore, when the liver is disturbed, there can be no health in the rest of the system.

INFLAMMATION OF THE LIVER.—The horse is rarely the subject of inflammation of this organ in an acute, but more commonly in a chronic form. It is often met with from the fact of many horses being highly fed, and having nothing to do.

Symptoms. The affected part is very obtuse. But we have a very striking analogy of this disease between man and the horse, which materially assists in forming a correct opinion as to the disease. Pain and lameness in the right shoulder are characteristic of liver disease, whether in man or horse, and have often been mistaken for and treated as the disease itself. Not less so is the peculiar yellowness of the membranes of the eyes, nose, and mouth, constituting a disease called by old horse doctors the *yellows*.

Treatment. Give powdered aloes, four drachms; powdered ginger root, two drachms; podophyllin, one drachm. Mix, and make into a paste with molasses, and form a bolus, or crumble the mass in a little thin gruel, and drench the horse with it. Feed the horse with green and soft feed to keep his bowels open.

These measures being neglected, suppuration or an abscess will be formed, and break into the bowels, or become absorbed and produce glanders, which I believe to be a prolific cause of this disease, and which is preceded by ill health and bad habit of body, terminating by a mysterious and unaccountable discharge from the nose, inasmuch as it is not accompanied with cough, and other symptoms of cold.

Locked-jaw. — This disease occurs usually after wounds of the feet, as from nails running into the feet, from wounds and fractures, and from a simple wound of a tendinous portion of the body. Locked-jaw occurring after wounds or other injuries, is called *traumatic*. And

when locked-jaw takes place, as it sometimes does, without any injury or assignable cause, it is called *idiopathic* locked-jaw. Locked-jaw may be defined a spasmodic contraction of the muscles of the body, often confined to one set of muscles alone. I have in practice seen the same contraction in one set of muscles of the body, and the muscles of the jaw free from the cramps and not fixed at all, and depending upon the same causes that often produce fixedness of the jaw. Locked-jaw is sometimes confined to the muscles of the neck, and is then called *trismus*.

Symptoms. The symptoms accompanying locked-jaw in the horse are so well known to everybody, that little need be said by me about them further than that there is general stiffness and fixedness in the manner of standing, and a peculiar expression of countenance. The extended and dilated nostril, and the fixed ear, tell the fact, very plainly, that the muscles of the head and neck are beyond the control of the animal, else his jaw or mouth would not be kept closed.

Treatment. Remove the painfully-stricken animal into a place by himself, where he will have plenty of air, and no sound or sight to disturb him, and where no curious idler can enter. Place a bucket of cold, thin gruel where the horse can get at it, without an effort to himself to reach it. This is all the feed he will be likely enabled to take for a period of from three to sixteen days. Renew it once a day, and keep it sweet. He may be able to suck this through his teeth. Small, choice morsels of other food should also be placed within his reach, so as no opportunity be lost whereby his stomach may be filled, and his overtaxed strength be supported.

In securing the gruel or other feed, have everything at hand, so that *only* one journey will be necessary, in the

twenty-four hours, to the place he is confined in. Open not the door of his house twice when once can be made to answer: thus much suffering may be avoided, and the chances of recovery enhanced. All the medicine necessary for the horse to have, will be one drachm doses, once in the twenty-four hours, of PRUSSIC ACID. Great care will have to be exercised in keeping this powerful poison; and considerable judgment as to how this medicine is to be given to an animal with his jaws closed. GENTLY elevate the head a little to insure proper gravitation, and pour the acid into the widest part between the teeth, and hold the head steadily for a few minutes; then retire, and close the door, not a loud word being spoken. A table or dessert spoon will answer for the purpose very well. Veterinary surgeons have an elastic tube, which is introduced into the back part of the mouth, and the acid poured down the tube.

If the animal live from three to four days, and is afforded every opportunity to eat a little, he may get well. Whatever the wounds or injuries that have given rise to the locked-jaw, they should be dressed with equal portions of olive oil and creosote, which will soothe the irritated nerves of the part. An occasional poultice of flaxseed may be necessary.

Above all things, neither bleed nor physic, as these can do no good, and will only hasten the death of the animal by taking away whatever strength he may have, all of which will be necessary to carry him through so severe a disease.

Loins.—Sprain of the loins or small of the back is sometimes seen in weakly built horses of irritable disposition.

Symptom. Weakness upon pressure, as of a saddle-horse yielding to the rider, when mounting the horse.

Treatment. Warm-water cloths should be laid over the parts for a few days, followed in the same manner by cold-water cloths. Give rest and good feed, and use the horse in the shafts of a light four-wheeled carriage, or in double harness. Saddle work may be the means of its return, more especially if ridden by a heavy person.

Loss of Appetite.—This is more of a symptom than a disease, and requires for its removal the cause which gave rise to it. In cold, influenza and fever, the appetite is bad, and with their removal it will be restored. Take powdered carbonate of ammonia, pimenta berries, gentian root, each two drachms, mix in some cold gruel, and drench the animal twice a day. This will not only remove, in a measure, the cause, but will restore the appetite also.

Lumbago.—This is applied to a peculiar stiffness over the loins or back, partaking of the nature of rheumatism, (which see.)

Lungs.—These are the organs of breathing, and are subject to many diseases, having names familiar to every horseman. Under this head, however, I will only notice inflammation of the substance of the lungs, *pneumonia*, (lung fever,) and of the surface of the lung, *pleurisy*, *abscess*, *adhesion*, and congestion. (See Cough, Cold, Bronchitis and Emphysema.)

(1.) Pneumonia.—(*Pronounced numonia.*)—This is an inflammation of the substance of the lungs, of late years called lung fever, and is sometimes very common in the spring after a severe winter.

Symptoms. Chill followed by fever and increased for a short time, and is succeeded by cold legs and ears, quickened breathing, and wide, open nostrils. A peculiar

quivering of the muscles of the side and breast will be observed in all cases of inflammation of the lungs, and will rarely deceive. The animal will eat nothing, and persistently stands with his nose and mouth in the manger; and if taken out of the stall and stable to the open air, he will almost refuse to go back again into the stable, relief being experienced from the fresh air. Hence, the necessity for plenty of fresh air in all diseases of the lungs. When the ear is applied to the side of the neck, a peculiar creaking noise is heard. Slight discharge of serous flakes or matter will be observed sticking to the sides of the nose. If this disease be not subdued or cured, it ends in abscess. The peculiar pulsations observed in this and other diseases, will be found treated of in the introductory remarks. To the non-professional person, the general aspect or appearance of the horse, when under this disease, is infinitely more important as a rule and guide in determining the seat and nature of the disease, than any assistance they can gain from the pulse.

Cause. Alterations and sudden changes in heat, cold, and moisture; an animal not in condition for work; a hereditary predisposition in the lungs to take on disease. Changes which will produce lung disease in one horse, will produce disease of a different character in another.

Treatment. Place the horse in a light and airy place, and clothe him according to the weather. Bandages to the legs will, at all seasons, be necessary to keep them warm, and to that extent relieve the lungs of a portion of blood. Aconite, judiciously given, is the most powerful remedy I am acquainted with. Tartar Emetic, so valuable in this disease in man, dogs and swine, has no more effect whatever, upon either horses, sheep or cattle, than so much flour or meal. Give twenty-five drops of the tincture of aconite

root, in a cupful of cold water, and drench the horse. Repeat the dose every four hours, till six doses are given. In the majority of cases, one to two doses will be all that is required to effect a cure.

(2.) PLEURISY.—Inflammation of the membrane covering the lungs and lining the cavity of the chest.

Symptoms. A rigor or chill, fever, disinclination to turn short, an occasional short painful cough, and careful breathing, accompanied with a sigh or grunt. A peculiar line will be observed in pleurisy, running from the haunch, round the belly to the breast-bone. The breathing is deep, not so short and quick as in inflammation of the lungs. In the first twenty-four hours after the attack, pain will have given way, and the horse be apparently better. This, in the majority of cases of pleurisy, when left a few hours to itself and not checked, terminates in *Hydrothorax*, (which see,) or water or serum in the chest, sometimes causing adhesions. The *favorable termination* of pleurisy is by what is called *resolution.*

Causes. Changes in the atmosphere. Exposure to cold. Broken ribs or wounds.

Treatment. Treat the horse as for inflammation of the lungs, by giving him pure air, cold water and aconite; followed on the second day by five grains of powdered Spanish fly in gruel, once in the twenty-four hours. To remove the fluids from the body, give, after the active stage of the disease has passed, good feeding and generous diet.

(3.) ABSCESS.—As elsewhere stated, abscess is the termination of inflammation of the lungs. Pus is a common result of inflammatory action, and when in the lungs is called *vomicæ*, causing, in some cases, consumption. Where absorption of the pus has taken place, glanders is the result.

The abscess frequently breaks into the bronchial tubes,

and then pus escapes into the larynx and *nares* of the nose. Hence, the persistent discharge which is so characteristic of glanders.

Treatment. The same as for glanders: generous diet, tonics and stimulants, with the sulphite of soda and the Spanish fly. (See Glanders.)

(4.) EFFUSION OF SERUM.—Hydrothorax is one of the ways in which pleurisy terminates, and when this effusion is extensive, not much hope of recovery may be expected. Cures, however, have been made by drawing off the fluid by means of a trocar pierced through between the ribs into the chest.

(5.) ADHESIONS.—The surface of the lungs becomes attached to the sides of the chest by fibrous bands of great strength, another common result of pleurisy. Nothing can be done but to keep up the health and strength by good feeding, etc.

When animals do not thrive and pick up their spirits and flesh after cases of pleurisy, some of these various conditions may be reasonably expected to be present.

(6.) CONGESTION OF THE LUNGS.—The lungs are liable to become congested, when they are overcharged with blood.

Symptoms. The horse blows, his nostrils are very much expanded, he is heaving at the flanks, and is the picture of distress and stupidity.

Cause. Weakness and want of power in the blood vessels to contract and empty themselves.

Treatment. Allow free access to cool air, clothe the body and bandage the legs to encourage the blood to the skin and legs, and give the following mixture: Sweet spirits of nitre, half an ounce; powdered carbonate of ammonia, half an ounce; mix in a bottle of cold gruel, in the form of a drink. If these articles are not at hand, give

two bottles of warm ale, or half a bottle of brandy or whiskey.

(7.) PNEUMOTHORAX.—So called because the air escapes into the cavities of the pleura.

Lymph.—This is a name applied to the clear fluid which circulates in the lymphatic vessels and that which is poured out in cut surfaces, after bleeding has stopped, and forms the medium by which the parts adhere, and are joined together. In this instance it is termed coagulable lymph, the principal element by which adhesive inflammation is carried on.

Lymphangitis.—This is a disease which attacks large coarse-bred horses that are difficult to keep in good condition, and consists in the outpouring of plastic lymph into the femoral veins of one of the fore legs, which, as a consequence, swells to a very great size, and exhibits to the touch a feeling of a great many irregular prominences under the skin. It is hot, painful, stiff, and accompanied with fever, which, in a short time, passes off. In a few days the heat, pain and swelling will diminish a little, and the horse will move more freely, but will, in most cases, retain a "thick leg" for life. Fomentations of warm water should be applied to relieve heat, tension, and pain; to be followed in a few days with broad bandages tightly rolled round the limb. Give soft feed, such as cut-mess, bran and green food. As soon as the animal can move the leg he may be put to slow work.

Madness.—A disease produced by the bite of a mad dog. (See Hydrophobia.)

Mad Staggers.—An affection of the brain. (See Staggers.)

Maggots.—These are sometimes seen in neglected wounds and sores, in warm weather. To remove them, apply equal parts of creosote and olive oil, or a solution of corrosive sublimate.

Malignant.—A term applied to diseases of a fatal character; as glanders, for instance. Why the term malignant should not be applied to such diseases as locked-jaw, and inflammation of the bowels, which are so often fatal, is one of the inexplicables of medical nosology or terminology, not easily for me to understand.

Malignant Epidemic.—English writers tell us that a malignant epidemic has attacked horses on the European Continent. Influenza is a disease from which scarcely one per cent. should die when scientifically and intelligently treated; but by bleeding, blistering, physicking, and low diet, a really simple and non-fatal disease is at once converted into a fatal and malignant epidemic.

Mallenders.—A term used by old books and horse doctors, to designate a scaly condition of the skin back of the leg and opposite to the knee. A term which certainly, to say the least, should long ago have been blotted out of all the books, as vague, uncertain, unmeaning.

This scaly eruption is the result of dryness of the skin of the back part of the leg, where the greatest and almost constant movement of the joint is going on. The same condition is seen on the face of some joints, and in others on the back, from the constant mobility of the parts.

Who has not seen scruffy or scaly heels of horses ending with scratches? (See Skin Diseases.)

Mange.—This is a disease of the skin, and is caused by a small mite called *acari*, which breeds and burrows in the

skin. To cure mange, destroy the insect. (See Skin Diseases.)

Materia Medica.—This is a name applied to every substance used in the treatment and cure of disease.

Megrims.—A disease of the brain occurring at periods, especially in hot weather, and when exposed to a powerful sun. This differs from epilepsy only in the absence of spasms. (See Epilepsy.)

Causes. Tumors in the choroid plexus, and enlargement of the pineal gland.

Treatment. Merely palliative, by using a dutch collar, so as not to interfere with the circulation of the blood from the head.

Observe. In summer the horses subject to brain disease, or fits of any kind, should not be used for family purposes. In winter they will make useful animals.

Melanosis.—A variety of cancer peculiar to gray horses, which turns white with age, and is caused by the transfer of the coloring pigment from the skin to the blood. (See Cancer.)

Melanoid.—(See Cancer and Tumors.)

Mesentery.—A membrane formed of two folds of the peritoneum, between each of which there are numerous glands, lacteals, lymphatics, arteries, veins and nerves. It is called the mesentery, because it adheres to three lumbar vertebræ, and has the small intestines hanging to it. One portion of it is called the mesocolon—supporter of the colon—and another the mesorectum, which encloses the rectum.

Mesenterica.—Wasting of the mesentery is a disease which is not very common to horses, although some clearly marked cases are sometimes seen, characterized by wasting

of the body, weakness, and general debility of the whole system. Bowels irregular, sometimes soft, at other times hard, of a pale or straw color, and frequently of bad smell. All that can be done is to keep the strength and condition of the horse up by iron and gentian, so frequently recommended throughout the book.

Metastasis.—A term denoting a change or shifting of disease from one part of the body to another. as is well illustrated in cases of rheumatism.

Moon Blindness.—(See Eye Diseases.)

Mortification.—Death of a part. (See Gangrene.)

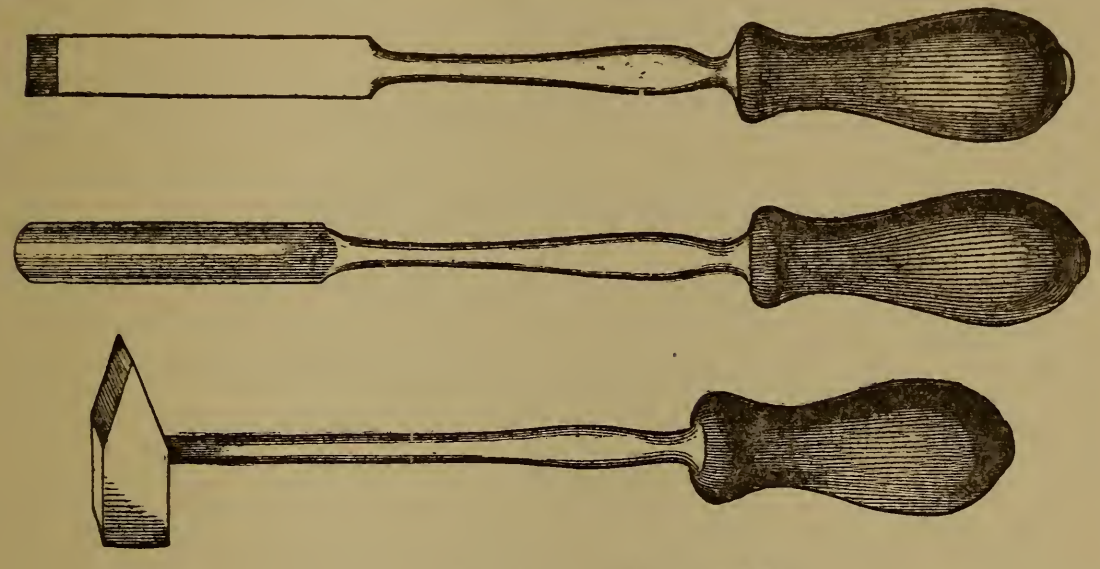
Moribund.—A term in use, and applied when men or animals are in a dying condition.

Mouth, Diseases of the.—These are but few; perhaps the irregularities of the teeth are the most important. So much is this the case, that from diseased or carious teeth, an affection arises, to many external appearances, similar to glanders; and horses have accordingly been destroyed, whereas, if a carious tooth, producing a stinking discharge from the nose, had been removed, these appearances would have passed off. The edges of the teeth of horses, at all ages, are apt to become sharp, and cut or wound the inside of the mouth, and interfere with mastication or chewing. When horses are off their feed and losing flesh, it will be well to have the teeth examined. To remedy any irregularity of the grinders, a rasp or file, with a concave surface and long handle, is used to make the teeth smooth and level. Wolf teeth are supernumerary, but do no injury to either the mouth or the *eyes*.

(1.) Scald Mouth.—Another simple affection of the mouth, which is characterized by the horse slobbering or

frothing from the mouth, as if salivated. In aggravated cases fever is present.

Treatment. Give ten drops of the tincture of aconite root in a little cold water three times in the day, for 48 hours, and allow the horse to have a bucket of cold water suspended or placed before him, to cool his mouth in.



TOOTH CHISEL, RASP AND HAMMER.

(2.) WOUNDS OF THE TONGUE.—Should be treated the same way, but without the aconite. If the tongue is nearly cut through, have the cut portion entirely removed. The horse can do wonderfully well without a large part of his tongue.

(3.) BLACK TONGUE.—This is not a disease, but the effect of a simple and non-fatal affection, frequently treated by bleeding, blistering and physicking—destroying vitality, and inducing mortification of the tongue, as well as of other portions of the body.

(4.) APHTHOUS THRUSH.—Soreness of the mouth, with white patches on the tongue, inside the cheeks and roof of the mouth. In man, this condition of the mouth is called *stomatitis.*

Causes. Bad condition of the stomach and dyspepsia.

Treatment. Borax in powder, one ounce; molasses, three ounces; mix, and apply with a soft brush, or soft piece of cloth. Give soft feed or cut grass. A few doses of sulphite of soda, half an ounce to a dose, given for a few evenings, will be all that is wanted. (See Lampas.)

The mouth is a favorite and convenient place for horsemen to try the keenness of their pocket knives, when the least pretext is offered.

The palatine artery is sometimes cut lengthwise; and when that is the case, the bleeding, thus unnecessarily induced, will not stop when it is wanted. Many plans and contrivances are recommended, by individuals, to stop such bleeding; but none are equal to a piece of iron or kitchen-poker immersed, for a few minutes, in hot water, and applied to the wound for a moment, which will at once stop further loss of blood.

(5.) PARROT MOUTH.—A malformation consisting in the upper front teeth, projecting over the lower ones. Young horses are little inconvenienced by it, but not so with old ones, when the teeth are long; for then the lower teeth wound the soft palate of the upper jaw, especially when the horse is eating. Keep the teeth short by the use of the file.

Mucous Membrane.—A thin lining of all the air passages; so-called, because the surface is kept moist, with a slimy matter, as referred to in the succeeding article. When this mucus is altered in quantity and quality, and when mucous-pus is poured out, disease is present. This is seen in cases of cold, bronchitis, and inflammation of the eyes, (which see.)

Mucus.—A thick, viscid substance, thrown out from the mucous membrane, throughout the body.

Myalgia.—A term given to inflammation of a set of

muscles, and is applied, by some, to wasting of the muscles, as is sometimes seen in sweenie.

Narcotics.—Medicines which act upon the nervous system, diminishing its power and sensibility, and so relieving inflammation, irritation, and pain. A medicine capable of doing this, also contains the properties of an anodyne, a sedative, soporific, carminative, and nauseant.

There are but few medicines possessing this power over the horse, and these are, aconite, prussic acid, veratrum, and, perhaps, lobelia. In my practice, nothing answers the purpose so well as aconite. It is the great antiphlogistic. Indeed, so great is its power, that in bronchitis, inflammation of the lungs, feet, and bowels, or where there is pain and fever, no remedy or remedies can compare with this invaluable medicine in the treatment of diseases of the horse. (See Medicines and Prescriptions.)

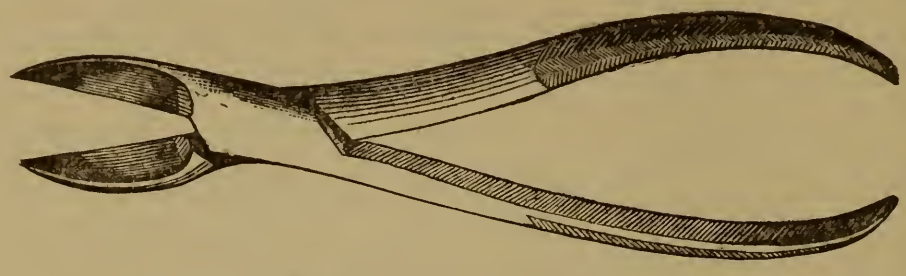
Nasal Gleet.—A thin, transparent discharge from the nose. (See Gleet.)

Navicular Disease.—This is a disease commonly called coffin-joint lameness, and by some it is termed grogginess. (See Foot Diseases.)

BONE HOLDER.

Necrosis.—This is a term given to a dead bone when it is attached to a sound one. The difference between *caries* and necrosis is this: Caries is present when the bone

is impaired only, and necrosis when the bone is entirely dead, and its functious have entirely ceased. When a bone has fallen into the condition of necrosis, its removal becomes as necessary as the removal of any other dead or



LISTON'S BONE FORCEPS.

foreign matter, in order that reparation and restoration of the function be repaired, and a cure be made.

Nephritis.—A technical term applied to inflammation of the kidneys, (which see.)

Nervousness.—Few persons having the care of horses have failed to observe in them, occasionally, a peculiar excitability of disposition when any confusion and noise is going on, and when being harnessed for work. The tail becomes somewhat elevated, they move from one side of the stall to the other, and pass manure from them repeatedly every few minutes, until one would think there was nothing left in their bowels. These animals are usually light bellied and poor feeders, but fleet and free goers, very gay in saddle or harness, and much admired by persons not versed in horse-flesh. They make excellent Sunday horses, but poor every-day animals, as the constant excitement, when at work, overdoes their physical powers. This condition impairs the value of the horse very much.

Treatment. Keep nervous horses in a place by themselves, where there is no noise or sound to disturb them, and have no harness or saddles in the place with them, nor clean

harness or saddles where they are; for whenever a piece of harness is seen in the hands of the groom, the animal expects it is to be put upon him—hence he gets excited, and efforts are made to empty the bowels of their contents. The harnessing or saddling should be the last thing done before going out with such a horse, as it gives him no time to empty the bowels and become excited. Ten grains of opium, and a drachm or two of prepared chalk may be given, either half an hour before going out, or after he comes in. Such horses are more pleasant to drive, if this be given. Stuffing cotton or wool in the ears also has a good effect.

Neurotomy.—An operation for dividing the nerves of feeling, as they enter the foot on both sides of the leg. The operation is performed for the purpose of removing pain from the foot in navicular disease. It has, however, of late years fallen into disrepute on account of ignorant men operating indiscriminately on feet of all forms and shapes alike—in consequence of which no surprise should have been expressed, when in some cases the feet ultimately fell off.

Neurotomy should never be performed upon flat and weak-footed horses, as they are easily bruised, and suppuration is set up, terminating in separation of the outer and inner foot structures. Weak and flat-footed horses, when sound, are careful how they put their feet upon hard roads and paved streets; but when deprived of all feeling by the operation of neurotomy, they let their feet come down on the ground with great force, so as to injure them, resulting, as before stated, in the hoof falling off.

Nose, Diseases of the.—(See Cold, Catarrh, and Bronchitis.)

Numbness.—Loss of feeling in any part, usually indicating disease of the brain, resulting in paralysis or palsy.

Obesity.—This is a term applied to morbid or unhealthy fatness. When this condition is in the mesentery, it produces big belly; in the liver, fatty liver; in the heart, fatty degeneration of that organ.

Causes. Little or no work, or exercise disproportionate between the amount of food taken and the waste.

Treatment. Constant and regular work; feed, in small bulk, oats instead of corn, and not much hay. To animals inclining to take on too much fat and flesh, give a dose of physic (see Aloes, Medicines and Prescriptions,) occasionally, but do not bleed.

Œdema.—A term signifying soft but not inflammatory swellings of various parts of the body, as a sequel to debilitating diseases. These swellings contain serum thrown out from the blood. The treatment of this affection will be the removal of the exciting cause. (See Dropsy.)

Œstromania.—This name is, by some, called œstening, which name is applied to mares and cows when desiring the male.

Omentum.—A fold of the peritoneum, which hangs down from the stomach, and is reflected on itself upwards and backwards to the colon. It is in this where the great deposition of fat takes place. The omentum is often implicated in rupture.

Open Joints.—(See Broken Knees.)

Ophthalmia.—(See Eye Diseases.)

Ossification.—The formation of bone; but in the

language of medical men, it means a deposition of earthy matter in the soft textures of the body where bone does not exist. Thus, for instance, we speak of ossification of the lateral cartilages of the foot, which form ring-bone. We have ossification of the heart, arteries, and other parts of the body.

Osteology.—A name used in speaking of the bony system.

Osteoporosis.—This is a name given to big head. It is incurable.

Ostitis.—(See Splint.)

Overreach.—This is the consequence of driving faster than the horse should go. The injury is generally done by the edge of the inner rim of the shoe. Avoid the cause, and treat the wound with the simple ointment. (See Prescriptions and Medicines.)

Ozena.—(See Gleet.)

Palliatives.—Medicines given not to cure disease, but to relieve the pain.

Paralysis, or Palsy.—Loss of the power of moving in some parts of the body. Paralysis may be confined to one leg or two legs; then it is called partial. When the horse has lost the power of standing, and the four legs are affected, then it is complete. Usually, however, in the horse it is confined to the hind parts, or the haunches and legs. Sometimes the paralysed part is numb, at others the sense of feeling remains.

Causes. Disease in the brain and spinal cord.

Treatment. If the patient is young, exercise patience and time, and nature will do a great deal in a disease of this kind. The general health is to be kept up by good feeding

and tonic medicine—such as fifteen drops of the tincture of nux vomica, four times in the twenty-four hours. Turn the horse from side to side twice in the day, and give plenty of dry, clean bedding to prevent the skin from scalding and peeling off—which is sometimes a source of great irritation to the poor horse. The paralysed parts should be well rubbed with a stiff brush. Electricity has been regarded as an advantage in this disease, but from what I have seen, not much need be expected from it. The nux vomica offers, with good feeding and care, the best chance for recovery. It must be remembered that this is a nervous affection, and probably these diseases are not so manageable, nor are they so easily cured, as other affections of a different type.

Parotid Duct.—DISTENDED.—This is a rare affection in horses. It resembles a round ball attached to the edge of the lower jaw; an elastic encysted tumor, or rather like an encysted tumor. An incident, slightly illustrative of appearance, occurred some time since. I was called in to see a horse that proved to be so affected, and told the gentleman that so long as the ball did not break, it would do the horse no injury, and that I would not recommend its removal; whereupon he said he would give five hundred dollars if the horse had another on the other side, that then he would look like an Angora goat.

OPEN AND FISTULOUS.—This is a serious affection, for with every movement of the jaw in chewing or masticating the feed, the glands pour out the saliva which should mix with the feed, and assist in the act of digestion, and it is lost upon the ground. The animal becomes thin of flesh, gets weak, and after a time dies a miserable object.

Causes. Injuries, or accident to the gland or its duct, resulting in suppuration. From the mobility of the parts, fistula is established.

Treatment. Few horse doctors or farmers can cure this affection. An expert or accomplished surgeon is only able to effect a cure, and this will be by closing the open or fistulous duct, so that the saliva will, with the feed, find its way into the stomach.

India rubber dissolved in chloroform, applied over the mouth of the wound, when it is thoroughly dry, will stop it for a few days. By continuing this application, a cure in very many cases can be made.

Pathology.—A department of medical science which treats of the causes and nature of disease, and of the appearances of diseased parts when living or dead.

Patella, Dislocation of the.—This is a common occurrence in high spirited, nervous and weakly horses.

Symptom. The horse stops, if at work, and throws up his head, slightly bending the pastern of the dislocated leg, and holding the leg back behind the body, being unable to bring it under it. Fever and irritation sometimes accompanies this accident, more especially if it is of rare occurrence in the animal. The oftener the patella has been out, the less fever and irritation will be seen. There are horses with which it is of frequent occurrence, and happily for them, there is just as little trouble in putting the leg in its place again; a crack of the whip will do it sometimes. This is a serious object, in an otherwise fancy horse. There is but one other affection of the hind leg which can be mistaken for it, and that is cramp, (which see.)

Treatment. Remove the horse to a stable, attach a rope to the pastern of the leg which is dislocated, carry the end

of the rope through a ring or over a beam at or about the horse's head, place the end of the rope in the hands of one or two strong men—telling them not to pull till a man is placed at the head of the horse to keep him steady—have another man at the leg with one hand placed firmly on the point of the hock-joint pulling towards himself, and the other pushing firmly against the dislocated joint, then let the men on the rope pull firmly and gently, till the foot is brought fairly in under the horse's body; after which the rope should be removed, and the horse kept quiet for a day or two.

Pasterns.—(See Sprains.)

Pelvis.—The anatomical name for the lower part of the abdomen or belly.

Pelvic Abscess.—This condition is sometimes seen in weakly constitutioned mares within a few days after foaling.

Symptom. In from one to four days one of the thighs of the hind legs will be swollen, hot and painful, causing the mare to shiver or appear chilly, not from cold, but from the suppurative inflammatory action going on. The milk will have almost entirely ceased, and the colt will have to be fed by the bottle as a child, or out of a bucket like a calf, till the mare is cured and the milk returns. One curious condition about pelvic abscess is, that although it suppurates, the abscess does not break usually on the thigh, as it would be expected to do, but within an inch or two from the haunch bone.

Treatment. The pus which has accumulated from so large an abscess, does not discharge itself from the place of opening, but burrows away down among the muscles of the hip and thigh, down to within a few inches of the hock

itself. Hence, the great secret in the treatment of pelvic abscess is to make *two* free openings, one above, at the point of the soft abscess, and the other within from four to six inches of the hock on the outside of the thigh. Then take a smooth elastic twig or a long piece of whalebone nicely smoothed with sand-paper, and introduce into the opening above, and gently force it down to within an inch or so of the lower opening. This being done, the pus will all discharge itself from the lower hole. Then inject with a small syringe, once a day, for a few days, about half a tablespoonful of the following mixture: Oil of turpentine and olive oil, equal parts. Keep the parts clean, feed the mare and colt well, and leave nature to complete the cure.

Penis Hanging out.—This a serious defect, and is the result of weakness and debility. The organ of generation is weak, the sheath swells, clasping the penis in its grasp until it also becomes enlarged, and in most cases will not draw into its place again, so that it must either remain so or be cut off close to the prepuce or sheath. This affection and the opposite conditions, Phymosis and Paraphymosis, were very prevalent amongst the horses of the army, in the late war.

Peristaltic.—A term applied to the serpentine motion of the bowels, one portion contracting and forcing its contents onward into the next.

Peritonitis.—Inflammation of the peritoneum, or the serous membrane which lines the walls or inside of the belly, characterized by great pain, and is the result of accidents or injuries, and, at times, surgical operations.

Treatment. The same as for any disease of an exalted kind, using aconite root, cold water and pure air, and after the pain and fever have subsided, good feeding.

Periosteum.—The thin pearly covering investing the bone. It is the stretch of this membrane in cases of splint which causes pain and lameness. (See Splint.)

Phagadena.—A name used in surgery, implying a spreading and destructive ulcer, which spreads rapidly and destroys the surrounding parts. The true meaning of this word is *eating*, and in its effects it is similar to what is called, in domestic practice, hospital gangrene—a local, spontaneous combustion, in which oil globules are poured out in great quantity in and around the sore or ulcer. These ulcers are common on the heels and legs of horses after a severe winter. When on the heels, the ulcers are taken by horsemen to be scratches. Phagadena does not usually assume the form or appearance of a cut or scratch, but is generally a flat, round or oval, and circumscribed sore at first; the hair of the part stands on end, with oil drops all over the surface, and in a few days the whole of the skin and hair falls off, or a separation of the edges of the sore will take place, and the skin and flesh of the part will completely fall out, (called core) leaving an unhealthy looking sore, with a white sanious fluid covering the whole of its surface. When the slough does not take place, it is gradually eaten away, and in this case leaves on the edges and surface of the sore a thin dirty colored looking skin or membrane.

Causes. Bad habit of body, from impure blood, death of the part from exposure of the heels in some mixture of salt and snow. Cold drafts under stable doors.

Treatment. The complete removal of all dead matter belonging to the ulcer, and a thorough cleansing of its inner surface. This is important, as it will not only be rendered necessary as a measure of cure, but as a surety against it spreading further up the leg or heels. Then

sprinkle the edges and inner surface twice in the day, for a day or two, with powdered blue stone to destroy the unhealthy surface and hasten a red surface, or the granulatory process by which the hole will be speedily filled up again. Complete the cure by sprinkling powdered loaf sugar over the sore twice in the twenty-four hours. Support the strength of the horse by good and generous diet. (See Scratches and Frost Bites.)

Phlebitis.—A name given to inflammation of the vein after bleeding, characterized by swelling and cording of the vein. (See Jugular Vein.)

Phlegmasia Dolens.—A name given to one leg when swelled to a great extent from plugging of the blood vessels of the leg with plastic matter poured into them from the blood. (See Grease.)

Phrenitis.—One of the many diseases of the brain characterized by the horse becoming unmanageable—a variety of staggers, or it may be of inflammation of the brain itself, and is incurable.

Physiology.—A branch of medical science treating of the life and functions of organized bodies.

Physicking.—In England, and in some parts of the European continent, a person who does not know how to physic a horse, whether sick or well, is not considered fit to take care of horses. In the United States, the man who knows all about, and recommends physicking under almost any circumstance, should not be permitted even to take a horse by the head, much less to take care of horses not his own. In an extensive practice of many years, I do not recollect a half dozen times, when I either gave or recommended a horse to be physicked; and no man can show

equal success in the treatment of diseases of horses and cattle, let his mode of practice be what it may. Remember, when the bowels are opened, and emptied of their contents, an important pillar has been taken from under the animal structure. Show me a European book on the diseases of animals, which does not recommend and minutely describe how to physic a horse, and I will show you a city without walls, without a church, or gymnasium. In this connection, I am sorry to say, that our American authors, on animal diseases, have copied too closely from European practice, which is utterly unfit for this country, climate and the constitution of all our domestic animals.

Pleurisy. — Inflammation of the serous membrane covering the lungs, and lining the sides of the chest. (See Lung Diseases.)

Pleuro-pneumonia.—Inflammation of the covering and substance of the lungs and chest.

Pleurodynia.—This is a rheumatic affection of the intercostal muscles, differing from pleurisy, from there being no constitutional disturbance, little fever, and no inflammation. It is treated with a dose or two of the tincture of aconite root given internally, and mustard and a little vinegar rubbed into the muscles of the sides, behind the shoulder.

Plethora.—Fullness of blood. (See Obesity.)

Pneumonia.—Inflammation of the lungs, (which see.)

Poisons.—These act differently in destroying life. They are derived from the organic and inorganic kingdoms, and their effects are either local or remote. Poisons may be taken into the stomach, inhaled in the form of sulphuretted hydrogen, communicated through the skin, as from the bite

of a poisonous animal, or absorbed from wounds. (See Glanders.) Poisons act in one of three ways:

(1.) IRRITANT POISONS are those poisons the symptoms of which are inflammation, irritation, and pain. Examples —arsenic, bi-chloride of mercury, lead, baryta, copper, and the Spanish fly.

Treatment. The plan to be adopted in this class of poisons in the horse is: Give him large quantities of the white of eggs, milk, linseed oil; and remove the poison as speedily as possible by giving large quantities of linseed oil—say two quarts. The horse cannot vomit; hence, it is difficult to procure a prompt evacuation of the stomach. If the pain be great, give aconite to subdue it, and to keep down inflammation and sympathetic fever.

(2.) NARCOTIC POISONS.—Poisons which act on the brain and nervous centres, producing stupidity or coma.

Treatment. Give four grains of strychnia nux vomica in few pints of gruel made with vinegar. Keep the horse walking around, and place chopped ice in a bag, and put it on the forehead.

(3.) NARCOTIC ACRID POISONS.—Poisons acting as the above, and causing irritation, inflammation, fever, and pain. Examples of this class are, nux vomica and veratria.

Treatment. Aconite will not only relieve the pain, but is an excellent antidote for strychnia; and for aconite, strychnia may be given with advantage in cases of this variety of poisoning.

Poisoning from lead and copper is most frequent in the country, or in the vicinity of lead and copper-smelting works, or in pastures where manure from large towns and cities is spread, or on farms where the water is conveyed in leaden pipes, or is kept in troughs and cisterns lined with lead. Pieces of lime and nails, or scraps of iron finding

their way into leaden troughs, cause oxidation of the lead, forming sugar of lead—a bad poison. Not long since, heavy damages were awarded a farmer who had lost several head of cows from lead poisoning, occasioned by the *spray* of leaden bullets shot against a stone wall by a rifle, or military company—the fringes of lead spread upon the grass, being converted into the sugar, or oxide of that metal, and the cows gathering it with the pasture.

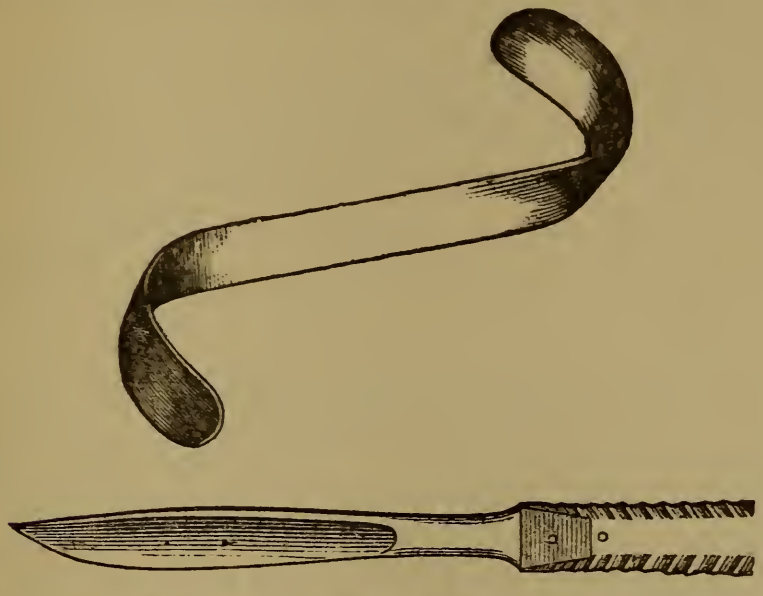
Treatment. Give large doses of white of eggs, and linseed oil, in either lead or copper poisoning, to shield the coats of the stomach and bowels, and to remove it from the body altogether. Happily for his owner, large quantities of poisonous materials are necessary to destroy the life of the horse. Materials which will destroy man, dog, and the pig, will not, in many instances, have any effect on the horse, sheep, and cattle. Antimony, an active and deadly poison, when given to omnivorous animals, has no more effect in a poisonous point of view than the same quantity of earth, when given to herbivorous animals. Hence, tartar emetic is now no longer used as a nauseant in the treatment of horses and cattle, when laboring under lung diseases, however useful it is in the same diseases in man and the dog.

Poll-evil.—This affection of the back part of the head is well known to horsemen, without much of a description being given. It consists in suppurative inflammation forming pus in the form of a simple abscess, or in the form of fistula, (which see.)

Cause. Injury to the part, or disease of the bone.

Treatment. As soon as the swelling has become a little soft, have it opened without delay, before the pus has time to burrow down among the bones of the neck, and cause disease in them. Make the opening large and deep enough.

so as to admit three fingers, that the abscess can be swabbed out with a piece of sponge or cloth tied on the end of a stick, to remove the pus. This will have to be done twice in the day, till no more pus can be brought out.



WOUND DILATER AND KNIFE.

Occasionally syringe or squirt cold water into the sore, and swab it out again, till completely dry. Then apply the following, once in a day, with a swab: Creosote, one ounce; oil of olives, two ounces; oil of turpentine, one ounce; mix. In applying the mixture do not use the swab too freely, as it may break down the granulations or the healing processes that are springing up to fill the hole or cavity, and thereby prevent a perfect cure.

When poll-evil is the result of diseased bone, and partakes of a fistulous character, it will not be so easily healed or cured; for the underlaying bone being carious, and becoming necrosed, before exfoliation or separation of the dead bone takes place the horse may be dead—the process taking years to perfect itself. And when it is cured, there is usually a stiff neck remaining ever after. Ten drops of sulphuric acid poured in the fistulous opening of the

swelling or sore will hasten recovery very much and in many cases effect a good and speedy cure. Once a day will be often enough, and if there be more than one fistulous opening, drop the acid into one to-day and the other to-morrow, and continue from day to day, till each and every opening ceases to discharge a whitish gray matter, and a dry looking opening is presented. Afterwards, use a solution of the sulphate of zinc: one drachm of the zinc to four ounces of water, will answer the purpose. Horses having sores of all kinds on their body should be well fed and cared for.

Polypi.—These are diseased enlargements, which grow upon the mucous membranes of the nose and ear, and in the uterus or womb of mares.

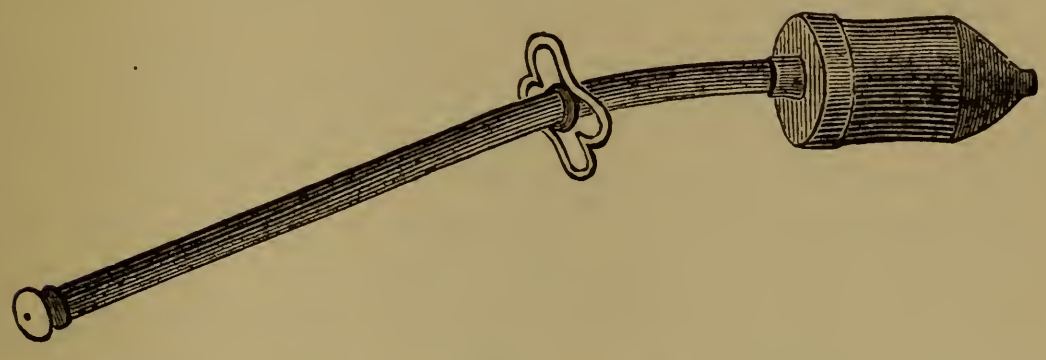
Treatment. If they are small, they are cured by touching them with a stick of caustic potassa; if large, cut them off with a sharp knife or scissors, and apply a weak solution of blue stone to the sore till it is healed.

Predisposing Causes. — Causes which render an animal susceptible to disease. For example, a young horse standing in the stable from day to day becomes predisposed to disease of the throat and lungs, when put to any exertion. Old age is a predisposing cause of disease. Some animals, as well as men, are more disposed to disease than others. From their temperament, and certain conditions of the solids and fluids of the body, the body is more susceptible to what is called a predisposing cause.

Prick of the Foot.—(See Foot Diseases.)

Probang.—This is one of two instruments. One is for forcing obstructions down the gullet in cases of choking, and the other an instrument used in giving to horses, etc.,

medicine in a solid form or in the form of a ball or bolus. For the former purpose a stout handle of a common cane whip will answer, and for the latter an instrument shown in the following cut is the best in use.



MOYER'S PATENT PROBANG.

Procidenta.—A term used to denote the falling down of the womb, or foal bed in brood mares. This affection is very common in milch cows; not so in mares.

Prognosis.—The foretelling the course and event of a disease, from its symptoms. Prognosis may be favorable or unfavorable. Nothing can so well distinguish the scientific veterinary surgeon from the blockhead in such matters as correct prognosis.

Prophylactics.—Is a term applied to the means made, or adopted, for the preservation of health, and the prevention of disease.

Proud Flesh.—A common name applied to hasty granulations in a sore or wound, which present a fungous appearance. To cure and prevent this, sprinkle a little white sugar, powdered blue stone, or a little red precipitate on the surface.

Prurigo.—An itchiness of the skin, which is best treated by the sulphite of soda, in half ounce doses, given every night in cut feed, for a week. (See Skin Diseases.)

Pulse.—This is the stroke or beat of an artery, consequent upon its alternate dilation and contraction caused by the action of the heart. The pulse is subject to many variations, even not depending upon disease. It is also liable to changes from temporary excitement, as from severe heat, etc. Medicines act upon the circulation, and consequently change the beat and character of the pulse. If the disease be debility, diffusible stimulants will be required to raise the pulse; and in order to depress the circulation, as in inflammation and fever, nauseants are indicated, such as aconite and veratrum. (See Pulse, in Introductory Remarks.)

Puncture.—Wounds inflicted with a sharp-pointed tool, as a staple or hay fork, etc. Punctured wounds are dangerous, depending upon their depth and locality, and should be treated by free openings from the bottom of the wound, to allow the exposed fluids to escape. The parts should be dressed with simple ointment. (See Medicines and Prescriptions.)

Purgatives.—A class of medicines capable of cleansing or emptying the bowels. Purgatives are distinguished from laxatives, only in the quantity given. Six to eight drachms of aloes will act as a purgative, and two to three drachms will act as a laxative. When laxatives are necessary, repeat at distant intervals.

Purpura.—This is a disease which is but rarely seen, and consists in the surface of the whole body and legs being covered with pimples, or small boils, which discharge a livid or purple-colored fluid. The animal is very much debilitated; and, accompanied with sympathetic fever, we not unfrequently see swellings of the head and parts of the body, with the legs very thick, and the same colored fluid

oozing out of them. Invariably the horse is scarcely able to move. The worst form of this disease, is the purpura hæmoragica, or bleeding purpura. The small boils are the result of extravasation from the minute blood vessels under the skin.

Cause. Venous congestion of the whole surface of the body, and, possibly, a deterioration of the blood itself.

Treatment. Support the strength, to keep off typhoid symptoms; enrich the blood, and attend to the surface sores. For this purpose, give the following powders, night and morning: Powdered sulphate of iron, three ounces; gentian root, two ounces and a half; carbonate of ammonia, four ounces. Mix, and divide into twelve powders, one to be given twice in the day. Give, occasionally, forty to sixty drops of commercial sulphuric acid in a bucket of cold water. Feed the horse well, and apply to the sores olive oil, three ounces; and creosote, one ounce; once every second day, and wash the sores twice a week. Horses once attacked by this disease, are ever after liable to it.

Pus.—This is the material found in abscesses. Pus may be healthy, or laudable, as it is called. Unhealthy, when it is mixed with blood and has a stinking smell. Healthy pus is of the thickness and color of cream, and is insoluble in water.

Putrefaction.—Certain diseases are regarded as putrid, where the discharges have a black appearance, and putrid smell. When weakness and debility are present, putrid ulcers spread rapidly. The treatment of putrefaction, in a living animal, should be directed to laying open the sores, so as to get rid of the putrid discharge before it is absorbed into the circulation. Then wash immediately with the solution of the chloride of lime, after which dress the sores

with equal parts of olive oil and creosote, and sprinkle them with powdered charcoal. Furnish the horse with good feed to support the strength, and give sulphate of iron and gentian root, two drachms each, night and morning.

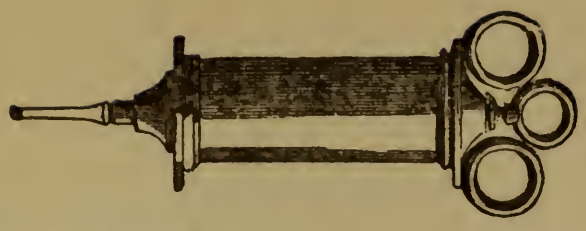
Putrid Fever.—(See Typhosus.)

Pyemia.—This is a term signifying pus in the blood, acting and setting up fermentation. Examples: Tubercles in the lungs, glanders, farcy, and grease. (All of which see.)

Quack Medicines.—These are medicines prepared according to private or secret receipts, and are puffed up in newspapers, and private circulars, as infallible cures for most all diseases which can be named, in either man or beast; either for external application, or internal administration. No subject in medicine has been more fully exposed than the great and absurd pretensions of these medicines. But, notwithstanding all this, the credulity of even the best class of society is great, the readiest victims being found among them. It surely requires no argument to show how dangerous must be the indiscriminate use of powerful drugs when compounded by parties who likely never had the slightest opportunity to acquire a medical education, and why such persons cannot cure, by their remedies, diseases which are, or may be, deemed incurable, and have defied the most consummate skill and experience of the veterinary medical world.

Quinsy.—A name given to sore throat. (See Distemper and Influenza.)

Quittor.—This term is used in England for a disease in the foot of a fistulous character. (See Foot Diseases.)



"QUITTOR SYRINGE, WITH RINGS. TO BE USED WITH ONE HAND."

Rabies.—(See Hydrophobia.)

Rachitis.—A disease of the bones of young animals, due to a deficiency of earthy matter, (lime,) which causes the bones to yield, being too soft. In colts of the first year, some will be observed to stand so close at the knees, that one joint touches the other, which gives the fore legs a curious looking twist, with the feet turned out, and the knees bent in. Colts so affected soon get well when they are supplied with good, nutritious food, in which the phosphate of lime predominates. Rachitis, (pronounced racketis,) in old horses, is seldom seen; and when it is, it is in the bones of the back or lumbar vertebræ, is characterized by swellings of an irregular kind, with water oozing from them, and is called hydro-rachitis or spina-bifida. Horses so affected are not fit for work with weight upon the back. (See Deformities.)

Resolution.—This is the most favorable termination of inflammation, and leaves the inflamed part in the same state or condition in which it was before it was attacked.

Respiration.—The alternate inspiration and expiration of air, performed for the purpose of exchanging the hydrogen and carbon for oxygen. The air being brought in contact with the blood, as it circulates through the lungs, the oxygen unites with it, and the nitrogen and carbonic acid gas is returned by expiration. The oxygen and some of the inhaled air is united in the lungs with

free hydrogen, which is given out from the lungs, and is readily seen issuing from the nostrils on a frosty morning, or when the thermometer is about 40°.

Revulsion.—A second attack of disease, but in a remote or different part of the body from which the first attack had its seat. Example: If an eruption, or the abscess of strangles be repelled from the outside of the body, we will find it attacking an internal organ. (See Metastasis.)

Rheumatism.—In no disease of the horse are there so many errors and mistakes committed; not only as to the nature of the affection, but its mode of treatment. Horsemen and horse doctors have not yet learned that there is a difference between rheumatism and FOUNDER, whether acute or chronic, and how to distinguish one from the other. The difference between acute or inflammatory rheumatism and acute founder is this: In rheumatism there is not only pain, but great fever and excitement, and its seat is in the joints of the legs; in founder, we have pain, but no fever, and the disease is confined to the feet alone. (See Laminitis.)

In chronic rheumatism there may be some excuse for such mistakes, as there is no fever; but there is an inability to move, as if the horse was sprained over the loins. (See Lumbago.)

(1.) ACUTE RHEUMATISM.—Nothing else but what is called (when man is the subject,) rheumatic fever.

Symptoms. Great fever, excitement, and irritation, with extreme pain in the legs and joints; so much so, that the stricken horse has not a leg fit to stand upon, and dares not move from the place he occupies, from fear of falling to the ground. In connection with all this disturbance, the horse sweats profusely, and blows or breathes excitedly,

having *no* heat in the feet, as in founder. It will be well to remember this, in forming a correct opinion of the case. In severe cases, the whole of the muscles of the body are set to quivering, clearly indicating inflammatory rheumatism in full force and degree.

Causes. Sudden check to perspiration, by placing heated horses in a current or draught of cold air, thus preventing the transudation through the skin of its formed and natural secretion, which being absorbed by the blood, and acting as a poison, produces inflammation in the sheaths of the tendons, and of the fibrous parts or tissue.

Treatment. The treatment of acute rheumatism is sometimes unsatisfactory; not that it is incurable, but from the fact that the medicines which frequently cure one will not cure other cases.

Give twenty-five drops of the tincture of aconite root every four hours, till six doses are given. Place the horse in a cool, airy place, with plenty of bedding under him, so as to induce him to lie down; then lightly cover the body, and apply cold water swabs or loose cloths to the legs, keeping them continually wet, from twelve to twenty-four hours. In winter, warm water will answer best. By the time the six doses of aconite have been taken, a great change for the better will have taken place; so much so, that, in many cases, the horse may be left to nature to complete the cure. But, on the other hand, should the disease take a chronic form, give drachm doses of the powdered meadow saffron seeds twice in the day, and occasional doses of sixty drops of sulphuric acid in half a bucket of cold water. Half ounce doses of the sulphite of soda may be given as an alkali. Do not bleed or purge.

(2.) Chronic Rheumatism.—I have no hesitation in saying that chronic rheumatism in a joint is one of the

most prolific causes of occult or hidden lameness in horses; while this is so, when there are no swellings to point to as a proof of the correctness of your opinion, many will question your judgment. But it is with this, as with many things in the world—time only being required for a thorough development of the fact.

Treatment of Chronic Rheumatism. Give a few doses of aconite root, followed by the colchicum or saffron seeds, the sulphuric acid and the alkaline, as is recommended in acute rheumatism, but not pushing them to such an active extent. A liniment may be applied to the rheumatic joint or joints composed of chloroform and olive oil, equal parts, to be used once a day, with friction by the hand. One part of the tincture of aconite root, may, in addition, be used to advantage with the chloroform.

(3.) RHEUMATISM.—*Accompanying Diseases of the Throat.* This combination is often met with, which is due to the fact that the same serous or fibrous tissue or membrane is affected in each of the diseases. Nevertheless, we do not see cases of throat disease following rheumatism; from which we derive the fact that those membranes are not capable of reflecting upwards and backwards their sympathy or feeling as the nerves of the body are. So, therefore, I am inclined to the belief that rheumatism in this form, is the effect of disease in the throat, and not a cause of the disease.

Treatment. Cure the disease in the throat, and the rheumatism will be deprived of its cause and support. (See Influenza and Gastritis Mucosa.)

Ring-bone.—This is a serious affection, and consists of a circle of bone thrown out from the underlying bone. Sometimes, in addition to this, the cartilages of the foot are converted into bone, and laid in the form of a circle; and

hence its name, ring-bone. It is most common in the fore legs of heavy, coarse-bred horses, with short and straight up pastern-joints. When it occurs in fine-bred horses, it is usually the hind leg which is affected. Ring-bone does not always cause lameness.

Cause. Hereditary predisposition, from a peculiar formation of pastern-joints, which are found not well adapted to hard work; and hence, an effort of nature is set up to strengthen parts which are too weak, by converting an elastic substance into a hard and unyielding mass, and a moving hinge into a fixture.

Treatment. If it is of recent origin, and the horse is young, much may be done in the way of a cure, by first removing all heat and inflammation with cold water cloths wrapped round the parts for three days, taking them off at night. At the end of that time, get one drachm of the bin-iodide of mercury, mix with one ounce of lard, and apply one-half of the salve by rubbing it in well for ten minutes. Tie up the horse's head for a few hours, and the next day wash off with soap and warm water, daily anointing the parts with lard or oil for a week; then apply the remainder of the salve in the same way, and proceed as before. In old horses, not much can be done with ring-bone, as the bones of old animals contain so much earthy (lime) matter that nothing can act upon it.

Ringworm.—(See Skin Diseases.)

Roaring.—A noise made by some horses when put to work. There are many different sounds produced from the same cause, and they are incurable, except when depending upon the presence of tumors, which can be removed. Roaring can be relieved somewhat by placing pads over the faulty nostril. When very bad, an operation

called tracheotomy—an opening into the windpipe, and keeping a silver tube inserted in it—is sometimes resorted to. By this means, a draught horse can be kept at work for many years.

Round Bone.—(See Hip-joint.)

Rowels.—An old-fashioned operation, consisting in an opening made through the skin for a few inches in length, the skin being raised from its attachments, and a piece of leather fitting the cavity placed into it, so that a discharge is set up in a day or two. Times were when this unnecessary cruelty was frequently inflicted upon the poor unoffending horse, but in this humane and progressive age, we only occasionally meet with the barbarity. Rowels are an abomination, and inflict a scar or blemish, which never leaves the part. The stupidity and ignorance of horse doctors generally, do not allow them to see that the powers of nature are more potent for good in curing the affection than a rowel—to which is attributed a power or virtue it never possesses. If I should put in a rowel, it would *not* be with the view of curing disease or sprain, but simply to secure the horse plenty of time in the stable, so that nature could cure the disease herself.

Ruptures.—The protrusion of some portion of the bowels or intestines out of their proper place. The groin, the navel, sides of the belly, and scrotum, or testicle bag, are the places where ruptures usually show themselves, and it is the variety of situation that gives rise to the many species of rupture or hernia.

(1.) Inguinal Rupture.—In the United States, the horses are mostly all castrated, which fact accounts for the rare occurrence of this variety of rupture. The operation of castration completely closes the inguinal ring or opening

through which pass the spermatic cord, testes, etc., thus preventing the possibility of rupture in that direction. When this kind of rupture takes place, it is in stallions and uncastrated colts, and requires for its cure the castration of the horse or colt by what is called the *covered* operation, that is, by leaving the *tunica vaginalis*, or inner covering of the testes entire and uncut, and placing the clamps over it, allowing the testes or stones to fall off, or be removed in two days from the time of operation. As soon as this kind of rupture is observed, have the horse or colt castrated at once.

(2.) Scrotal Rupture.—This variety of rupture, entirely confined to the testicle bag, or scrotal sac, is also the affection of uncut horses, and is caused by relaxation of the fibrous tissue around the inguinal ring. This is a kind of rupture which comes and goes, as if it were an intermittent affection. The rupture, or large swelling, during rest will entirely disappear, and return during exercise, sometimes with violence, throwing the horse, perhaps, into a fit of colic, and inducing strangulation and death of the horse. Scrotal rupture is sometimes confined to one side only of the scrotum. If in time the animal should not die from strangulation of the bowel, the rupture will sometimes increase to an enormous size, hanging far down, and filling up the space in and between the hind legs.

Treatment. The same as for inguinal hernia. Of course, in both cases, care should first be taken to push back the bowels through the ring into the belly, before removing the testicles. Scrotal rupture should not be confounded with hydrocele, or water in the scrotal sac. (See Dropsy.)

(3.) Congenital Rupture.—This is a species of rupture observed at the birth of the foal or colt, and is the least dangerous of all the varieties of ruptures, although

the rupture continues to grow and increase in size until the fourth to the sixth month of the colt's age, and then gradually and progressively disappears altogether. If, however, it should not at the end of that time diminish in size and volume, a tolerably stout and tight collar or bandage may be placed around the body, covering the rupture. This band should be kept in place by a broad collar or cloth attached to each side of the body bandage, and passing in front of the breast, with another round the back parts of the hips—thus preventing a backward or forward movement of the body bandage.

If rupture should occur in a few days after the birth of the colt, it should, to all intents and purposes, be classed as congenital rupture, and be treated accordingly.

Congenital rupture is the same as what is called by some writers umbilical rupture, which is correct as far as it goes; but congenital rupture includes not only the navel, but the scrotal also. The navel variety can be most successfully treated by letting it alone; or, in some cases, by the application of a bandage. When, however, in the scrotum, castration is the only cure, and a bandage in this case would not only be useless, but hurtful to the colt.

(4.) VENTRAL RUPTURE.—This is when the bowel protrudes through any part of the belly, excepting at the umbilicus or navel, or any natural opening, and is generally the result of injury or accident, as from a hook from the horn of a cow, or the kick of a horse. The common place where this kind of rupture is usually seen, is on the lower portion of the belly, between the ribs and at the flanks.

Symptoms. A large, puffy swelling which can be lessened in size and forced into the cavity of the belly again, by merely pressing against it. The skin will be loose when the bowel is thus pushed in; and when the pressure has

ceased, the enlargement or swelling returns at once, and fills up the loose skin.

Treatment. In most cases, let the enlargement alone; as, in nearly all instances, no inconvenience from it will be experienced by the horse. The only way to reduce such a rupture is, by gathering and holding the loose skin, and covering the rupture after the bowel has been pushed into its place by means of long clamps, like a long vise, till the skin falls off. This cure is worse than the affection it is intended to remedy; for by breaking the skin the bowels are exposed to the air and the uncertainty of the edges of the skin uniting firmly together. This is frequently, also, more than can be expected, as the horse is not a rational being, and cannot be told to stand this or that way, in this or that position. If he experiences any pain, he will become restless, and lay down, and roll; and then what of the nicely adjusted clamps? In short, the horse will die in a few hours.

(5.) RUPTURE.—*Of Castration.* This variety of rupture sometimes follows immediately, or a few days, after the operation of castration.

Causes. When the rupture occurs as soon as the horse rises from the operation, it is produced by the violence of the struggling, or rising with too much of a jerk. When occurring a few days after the operation, the cause may be laid to the wound not healing and uniting properly.

Symptoms. As in colic; the horse rising, lying down, pawing, rolling, sweating; high fever and inflammation; and, finally, gangrene, or mortification of the parts, and death of the horse.

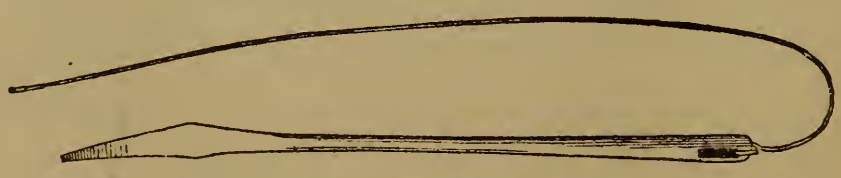
General Remarks. The termination of ruptures of all kinds and varieties most to be dreaded, is that condition known as strangulation, which occurrence is indicated by

the pawing, rolling, sweating, and restive condition of the horse, etc. If not relieved in a very short time, he will die. To reduce strangulation, he must be secured, and fastened; and all conceivable ingenuity must be exercised to get the bowels back into their proper place. No rule can be laid down to accomplish this, as some ruptures are reducible, and others are not. But the hands of the operator must be well oiled when handling the bowels, and the bowels kept scrupulously clean; and when they have been successfully placed into their proper cavity, the horse will be at rest, and relieved from pain. To prevent the bowels from returning again, the rupture must be closed by skewers made of iron, or stiff wood, passed through the lips of each side of the wound, half an inch from the edge, with waxed cord wound round and over the skewers, in the form of the figure 8.

Metallic or silver wire is used by scientific veterinary surgeons in securing the edges of the skin of ruptures and injuries to the belly of all domestic animals, as the best and most successful plan.

Ruptures of the stomach, bowels and diaphragm, are occasionally the immediate cause of death in cases of colic. (See Hock, etc.)

NEEDLE WITH FIXED HANDLE.



NEEDLE ARMED WITH WIRE.

Saddle Galls.—Sores produced by the saddle and other portions of the harness, and are best treated by the

compound tincture of aloes. When the sores become hard and firm, like warts, use the ointment of iodide of mercury. (See Medicines and Prescriptions.) Remove the cause of the trouble by attending to the saddle and harness, and if no fault be found with the stuffing of the saddle, cut a hole in the padding sufficiently large to accommodate the sore without touching it.

Sallenders.—(See Mallenders.)

Saliva.—A fluid secreted by the salivary glands, which serves to moisten the mouth, and is swallowed with the food. When horses are feeding, the saliva mixes with the feed, and resolves, dissolves, and changes it into a soft mass fit to be swallowed. (See Parotid Duct.)

Salivation.—This is an increased flow of saliva induced in the horse by mercury and other medicines, and is often seen in horses feeding upon the second crop of clover late in the fall of the year, or after slight frosts; which fact sufficiently accounts not only for the salivation of, but also affords the reason why horses so feeding lose flesh and become thin and weak, although apparently feeding upon abundance.

Second crop clover grows fast, is soft, and full of moisture, while the cool nights arrest its mush-room growth, and the moisture it contains in great quantity is converted from a sweet and nutritious substance into a sour and acidulous fluid, not unlike vinegar or acetic acid. The acid so formed within the clover leaf and stem is pressed out by the act of mastication or chewing, stimulating the fauces of the mouth and the salivary glands to a great extent and taxing the substance of the body for the saliva to meet an enormous demand. Hence, the weakness and loss of flesh of horses so fed.

Sand Cracks.—(See Foot Diseases.)

Sanious Pus.—Pus mixed with water and blood;—unhealthy pus.

Scalds.—(See Burns.)

Scald Mouth.—(See Mouth Diseases.)

Scarlatina.—A disease newly discovered in light-colored horses, attended by sore throat, as in man, and with slight fever and dry skin—the glands of the neck are slightly swollen, and in about two days the lining membranes within the nose and lips become studded with scarlet spots about the size of a garden pea, which run together. In light bay horses will be seen patches from which the hair falls off and is replaced by a coat of a lighter color, thus making the animal look as if he had had an attack of varioloid or small-pox. Scarlatina is an eruptive fever, running a fixed and definite course, and is closely allied to purpura, influenza and strangles, (all of which see.)

Treatment. Place the horse in a cool place, and give small doses of aconite, followed by gentian and carbonate of ammonia. In a few days iron may be added. (See Medicines.)

Scratches.—(See Grease, Phagadena, and Frost Bites.)

Schirrus.—Pronounced *skirrus*, and signifying induration or hardening of any structure, but now used only when speaking of cancer.

Scouring.—(See Diarrhœa.)

Scrotum.—The bag or skin covering the testicles of the stallion, which is the seat of large watery swellings, as a sequel to debilitating disease, or disease treated by starving, bleeding, etc. If the swelling does not grow less

after extra feed is allowed, and a few iron powders are given, the scrotum will have to be opened a little on both sides to allow the fluid to flow out. Do not mistake the swelling for scrotal rupture. (See Ruptures.)

Scurf.—A scaly eruption on the skin of badly-groomed and cared for horses. It is cured by good grooming, good feeding, and, in some cases, a change in stabling.

Secretion.—The product secreted or separated from the blood. Secreted products are of two kinds:

(1.) *Excretion*, or matter separated by animal bodies, and thrown off on account of their noxious or effete qualities. Examples—the urine, the dung, sweat, and carbonic acid gas from the lungs.

(2.) *Secretion* is matter separated from the blood for further use, and for the performance of various actions in the living system. Examples—bile, saliva, etc.

Sedatives.—Medicines which lessen pain, and should, therefore, be called calmatives. Aconite is the most certain and successful sedative and calmative we have to offer, and will seldom disappoint the highest expectations, if used properly, and in good time.

Serum.—The thin, colorless fluid, which separates from the blood.

Serous Abscess.—A variety of abscess seen usually about the breasts of horses. It arises from injury followed by the pouring of a serum from the blood into the injured part, which, not being absorbed readily, remains there in the form of a large ovoid flattened bag. A blind man, who never saw a tumor, could tell that it contained fluid. Indeed, wherever dropsical swellings are not absorbed, a serous abscess will be formed.

Treatment. Open it with a knife, making a large opening through the skin, only at the lowest soft part, so the serum will run out without pressing. Inject once or twice with cold water, and anoint the skin with lard to prevent it from cracking or becoming dry.

Seton.—A piece of tape placed under the skin by means of a needle, made for the purpose. Setons are rarely of use, and are often torn violently out, making an ugly sore.

Shivers.—So called because the horse is seized with tremor of the muscles of the whole body, when any attempt is made to push him back. The tail is erect as in cases of locked-jaw.

Causes. Tumors on the ventricles of the brain.

Shoeing of Sound Feet.—Most diseases of the feet, and every stumble are, either directly or indirectly, the result of bad shoeing. Horse-shoers have long been in the habit of using the knife and rasp too freely to keep feet sound very long so. When the shoe is carefully removed, the wall or crust, where a well seated shoe should only rest, should be gently rasped to remove fragments of loose horn and old nails. In deep, well-made feet, the sole requires paring out till it is in the form of a cup, but not too thin—the bearing surface, or wall, to be made level for the new shoe. This is all that is required in a sound foot. The frog must be left to fill its functions. Above all, do not let the rasp be used upon the surface of the foot, for it is the skin of the hoof, and by its removal you expose it to every change in moisture and dryness, and leave it weak, dry, porous and brittle.

The shoe should be a plain one, equally broad and wide from heel to toe, and put on without *seating;* for why

bring a concave foot in contact with a concave shoe? The toe should be slightly turned up, and not too short at the heels. The hind shoes should be provided with heels.

The nail holes should be three on the outside, and two on the inside, and made straight through the iron, and not incline inwards, and the shoe fitted to the foot, and not the foot to the shoe.

Dray horses should be shod with tips, or toes and heels, which secure firmness of tread, and greater power when drawing heavy loads, especially in cities with smooth paved streets.

Shoeing Unsound Feet.—Feet with corns, weak, flat feet, convexed sole, and sand or quarter cracked feet, should have shoes well-seated; and it is advisable to throw some extra weight upon the frog, for which purpose a bar-shoe should be used. (See Foot Diseases.) Leather soles are useful in weak-soled feet when the horse steps high and is much used upon city streets. One-sided nailing answers well for weak heels. Ring-boned animals should be shod with easy fitting shoes, to avoid jarring. Horses having a tendency to navicular or coffin-joint disease should have shoes turned up a little at the toe, with the ground surface of the wall well cut away, and the sole and frog untouched. The art of shoeing horses consists in fitting a shoe to the foot of a horse, for the purpose of protecting, and, at the same time, not injuring it.

Shoulder Lameness.—This is produced by a slip, or side-fall, and is frequent with horses in cities having broad rails laid on the streets for railroad purposes. In wet weather these rails are very slippery; hence the horse has no foot-hold, the leg is stretched far out before the animal and the muscles of the shoulders, and in some cases, the

shoulder-joint is involved. A much more serious affair than simple shoulder sprain is the result.

Shoulder lameness is common to young horses when ploughing in the furrow.

Symptoms. The absence of heat; tenderness, and swelling in any other part of the leg or foot. Always find out with certainty where there is no lameness and the situation of lameness will very soon be apparent. Negative and positive symptoms should always be well considered before coming to a final conclusion, as by doing so the situation or trouble is so narrowed down that a mistake can scarcely occur. Shoulder lameness, however, is known by the horse stepping longer with the lame leg, and shorter with the sound one; and, excepting in very severe cases, the horse will not only point the leg out from the body, but carry it also to the side of the body. Now, in most sprains and diseases in the foot, the leg will be pointed straight out without any side position. Take the leg which is lame by the pastern, and gently carry, or pull it straight out from the body of the horse in front, and gently also to the outside; if it be shoulder lameness, the horse will not only show evidences of pain, but will in many cases, depending upon the spirit and animation of the horse, get up from the ground with the sound leg and endeavor to wrest the lame leg from you.

In very severe cases, when occurring from a bruise, the horse will stand on his toe, which is evidence of contusion of the shoulder.

Treatment. Absolute and entire rest, warm water cloths applied for two days, followed by cold water cloths, in the same way, and for as many days. Then a slight blister of the Spanish fly may be rubbed into the skin of the shoulder, taking care that none of it is put on at the situation of the

collar, as it would render the part a little tender for a while by friction from the collar. Take Spanish fly in powder, one drachm; hog's lard, six drachms; mix, and make an ointment, or salve, and rub the better half of it into the skin. Next day wash off with warm water (not hot), and when dry from washing, anoint the blistered parts with oil or lard, daily, for a week. It is not advisable to put horses to work, or even exercise, too soon after getting well from lameness.

Shoulder-joint Lameness.—This is a more serious form of lameness than sprain of the muscles of the shoulder. It consists in the softening of the articular cartilages of the joint, with inflammation of the joint membranes, and great secretion of unhealthy synovia, (joint oil) producing bulging of the ligaments, (capsular) and covering the joint. It can be detected by making the horse stand upon the lame limb, and by holding up the other one. This is a disease similar to spavin in the hock-joint, which accounts for the unsatisfactory results of treatment.

Symptoms. The horse drags his toe, and throws his leg out at every movement of the limb.

Treatment. As before stated, this is rather unsatisfactory, from the fact that the cartilages are likely to be destroyed, and the bone underneath apt to become ulcerated; but if taken in time, much good can be done. In many cases, a cure can be effected by the ointment of red iodide of mercury, well rubbed in once a week, for a few times.

Take of bin-iodide of mercury, two drachms; hogs lard, two ounces. Mix well on the bottom of a dinner plate, or a smooth slate, with a table knife. Of this ointment, take one-fourth and rub well into the joint, tieing up the horse's head for a few hours, to prevent his getting at the shoulder with his mouth; allow soft bedding for the front feet to

stand upon, as the horse will stamp with his foot on the floor—for the action of this ointment is considered to be as painful as the hot iron, for about half an hour from the time it begins to act till the parts commence to swell from its *splendid* effects. Hence, firing irons are now not much used, except in the hands of old fogies. Daily, oil or grease the parts for a week, then apply as before, and remember, that to get all the benefit of this ointment, it must be well rubbed in the parts.

Side Bones.—A species of ring-bone; only the side cartilages of the foot are converted into bone, and do not, as in ring-bone, extend round the coronet, or portion immediately above the hoof. The cause and treatment are the same as in ring-bone, (which see.)

Sinus.—A long, narrow and ulcerated track, communicating either with the inside of an abscess or diseased bone. (See Fistula and Poll-evil.)

Sitfasts.—These are hard and insensible tumors, sometimes called warbles, and are caused by undue pressure from the harness.

Treatment. Rub in, about the size of a bean, of the ointment of red iodide of mercury. (See Prescriptions and Medicines.)

Skeleton of the Horse, Bones of the.—The skeleton is composed of two hundred and forty-seven separate bones, which are united by joints to form the spine, thorax, pelvis, tail, and fore and hind extremities. The spine is finished anteriorly by the head, which is divided into the cranium and face, and contains the teeth. Suspended from the head is the os hyoides, which completes the number of bones. Thus:—

The spine consists of 7 cervical, 18 dorsal, and 6 lumbar vertebræ—Total	31
The thorax is made up of the dorsal vertebræ, with 18 ribs on each side, and the sternum in the middle —Total	37
The pelvis comprises 2 ossa innominata (or ilium, ischium, and pubes), and 1 sacrum—Total	3
The tail contains on the average 17 bones	17
The fore extremity is made up on each side of the scapula, humerus, os brachii, and 8 carpal bones, 3 metacarpal, os suffraginis, os coronæ, os pedis, os naviculare, 2 ossa sesamoidea—Total on both sides	40
The hind extremity has the femur, patella, tibia, fibula, 6 tarsal bones, 3 metatarsals, os suffraginis, os coronæ, os pedis, os naviculare, 2 ossa sesamoidea —Total	38
Bones of the cranium	10
Bones of the face and lower jaw	18
Teeth	40
Bones of the internal ear, 4 in each organ	8
Os Hyoides, or bone of the tongue, made up of five sections	5
Grand total	247

Skin Diseases.—There are many, and apparently different varieties of skin diseases described by writers, many of which are the same, and produced by the same cause, but present different appearances in different animals, and in different stages and conditions of the affection. Where the same cause can be properly assigned in producing different diseases, although apparently dissimilar, the treatment must be the same. Thus, if the *acari* is the cause of more than one kind of skin disease, of course the

treatment must be directed to the destruction or removal of this insect or mite, before a cure can be effected; so, also, with faulty assimilation or digestion, which so often gives rise to skin disease, and which must be improved and corrected before the effect, (disease,) will cease and be cured.

(1.) BALDNESS.—Parts of the skin of the horse become denuded of the hair, occasioned by minute or small pimples, which usually contain a fluid, and burst, or break, carrying the hair with it. These pimples, or small tumors, however, are sometimes vesicular, sometimes papular, and sometimes scaly. They are caused by faulty digestion, and should be treated by soft feed, or fresh-cut grass. The hair will grow again.

Baldness is caused by scalds, burns, and blisters; and where the *true* skin is not entirely destroyed, the hair can be restored by using a *weak* ointment of iodine—iodine, half a drachm; hog's lard, eight drachms; mix, and apply by rubbing with the hand, once every third day, till there are evidences of a growth of hair springing up. Gunpowder and lard have no more power in causing hair to grow, than as much lard, saltpetre, sulphur and charcoal would have; nor is it to be compared to the iodine, because, if iodine does not restore the hair in all cases, it will certainly dye or stain the skin a dark color, which cannot be washed off; and hence, in dark-skinned horses, is of much use in removing the bare, bald-look of a white spot.

(2.) MANGE, ITCH, PSORA, OR SCABIES.

Cause. The result of an insect breeding and burrowing in the skin, and is called *acari*, a variety of mite or animalcule.

Symptoms. At first, a fine crop of pustules, not at this time always seen, about the head and neck, and under the

mane. By the horse rubbing himself against whatever he can get at, the hair falls off, and exposes an angry and red-colored skin, with red points and lines, fissures, wrinkles, or scratches. After this condition, we have dryness, scruffiness, baldness, and whitening of the skin, accompanied with great itchiness.

Treatment. The best plan for curing this disease in horses, is as follows: Take fine sea-sand, such as is used by stable-men for scouring steel bits, and rub the affected parts well for a few minutes. Then wash the parts well with good soap and water, and a brush, after which dry them carefully. Then anoint with the following ointment: Powdered sulphur, one ounce; hog's lard, two ounces; mix. The following is more cleanly: Liver of sulphur, or hepar of sulphur, two to three ounces; cold water, one quart; mix, and make a wash. This plan, with either of these mixtures properly applied, will not only kill the insect, but will effect a cure. This disease has baffled many who have attempted its cure without first reaching the insect, by scouring him out of his covering, and killing him with sulphur—a highly destructive article to parasitic life.

Observe. This disease is contagious. Stall-posts, mangers, harness, combs, brushes, etc., used about the horse, should be subjected to great heat either by boiling or steaming. Trees, gates, and rubbing-posts in the field, should be washed with water, and coated with a mixture of sulphur, lime and water.

(3.) Eczema.—This is an affection peculiar to some horses during the summer months. By close inspection, large numbers of minute elevations, or raised parts, closely joining each other, and filled with a watery fluid, will be observed; the skin will soon present a red and angry look,

the hair be short and dry, accompanied with extreme itchiness—so much so, sometimes, that horses so affected become almost unmanageable. The situation of this disease is usually in the hind legs, and is considered hereditary. At all events, when a horse is once attacked by it, it is liable to return again with the warm weather.

Cause. A peculiar condition of the blood, developed by heat.

Treatment. This disease in my hands, in several carriage horses which were rendered completely useless in the summer months, has not only been cured, but also prevented from returning, by the administering of half ounce doses of the sulphite of soda, for two weeks previous to the hot weather, once a day. In addition to this, a few bundles of fresh grass, cut from the borders of several gardens, were given. The soda, designed to neutralize, ferments in the blood; and the fresh cut grass to assist, by its action on the stomach and bowels, and ultimately upon the blood itself.

(4.) SURFEIT.—A disease making its appearance in the spring of the year in fat horses that are short and well built. It is characterized by tumors about the size of a grain of Indian corn, covering the whole body as completely as the nettle-rash does that of children, and does not generally cause itching, nor is it, like some skin diseases, contagious.

Cause. Robust stamina.

Treatment. Give soft or slop feed composed of bran, cut hay, cold water, and salt, for a few days. Give grass, if it can be had, without any additional feed. A few doses of the sulphite of soda will be of advantage.

Bleeding and purging have arrested the tumors in their growth, but unfortunately they become permanent fixtures.

only to be removed by calomel and opium, which cause their absorption. In this event take calomel, thirty grains; opium, ten grains; mix, and give once a day, for a week or ten days. Good feeding will have to be given.

RINGWORM.—*Porrigo*, and *Favus*, are names given to this disease.

Symptoms. Small circular patches, or scales, sometimes running together, forming large crusts and ulcers under them, in which insects breed. This is a contagious disease, and is communicated from man to animals, and animals to man. The microscope has shown the presence of fungi in the scab of ringworm, but whether it be merely the effect of the disease, or otherwise, is not at present known. It is, however, more likely to be the cause.

Treatment. Wash and keep the parts clean, and aim at destroying the fungi. For this purpose remove the scab as soon as formed, and apply a solution of oxalic acid to the surface, using fifteen grains of the acid to an ounce of water. Tar ointment, creosote, sulphur, and mercury, have all been tried; but none of these meet with so much success as the solution of oxalic acid, just recommended. For other diseases of the skin, see Grease, Mallenders, Sallenders, Tumors, and Boils.

Slobbering.—This is traceable in horses to a variety of causes. We may enumerate large doses of aconite, or veratrum; also, sore, or scald mouth, and in some cases poisoning. Slobbering from eating second crop clover, will be found treated of under the article SALIVATION, (which see.)

Slough.—The separation of a diseased or dead part from the healthy portion. A slough may be of greater or less thickness, and may include the skin and flesh to a

considerable depth—as from the centre of an abscess. (See Gangrene and Mortification.)

Sores.—Healthy and unhealthy sores occur in, or on, all parts of the body of the horse. Healthy sores are best treated by the tincture of aloes, or myrrh, or simple ointment. (See Medicines and Prescriptions.) Unhealthy sores should be treated, first, by the application of some caustic, or powdered blue stone, nitrate of silver, or caustic potassa, which will make an unhealthy sore a simple and healthy one. To be treated as the above.

Sore Mouth.—(See Mouth Diseases.)

Sore Foot.—(See Foot Diseases.)

Sore Throat.—(See Catarrh, Cold, and Bronchitis.)

Sore Back.—Re-stuff the saddle, and apply the tincture of aloes or myrrh.

Sore Shoulders.—See to the collar, and apply as in sore back.

Sore Neck.—A variety of this disease presents itself about the place where the collar usually rests and presses when descending a hill in double team. They are very troublesome, and difficult to heal, if the horse is kept at work, and cause great irritation and uneasiness. Frequently, when the hand is laid upon it, the horse, if he be a spirited animal, will plunge in the stall, and even kick, however quiet he may be at other times.

Treatment. Apply simple ointment, and place a firm, but strong piece of leather over it, so that the collar, when put on, can rest upon and slide over it, instead of upon the mane and neck.

Soundness.—This is when a horse has nothing about

him, that does or is likely to interfere with his feeding, working, and general usefulness.

Spavin.—A variety of disease affecting the hock-joint. Spavin is not now looked upon as in the days of Oliver Goldsmith and William Shakspeare, because in the minds of those distinguished men, and of some of their readers of the present time, spavin is an enormous enlargement of the hock of the horse; whereas, in some of the worse forms of spavin, there is no enlargement at all, while the hock-joint is completely destroyed, stiff, or anchylosed. Shakspeare thus refers to Petruchio's horse:—"His horse hipped with an old mothy saddle, the stirrups of no kindred: besides possessed with the glanders, and, like to mose in the chine, troubled with the lampas, infected with the fashions, full of wind galls, sped with *spavins*, raied with the yellows, past cure of the fives, stark spoiled with the staggers, begnawn with the bots, swayed in the back, and shoulder shotten, ne'er legged before, and with a half-cheeked bit, and a head stall of sheep's leather."

(1.) Bog Spavin.—This kind of spavin is situated in front of the hock-joint, and is a soft, fluctuating swelling, which rarely ever causes lameness. It is merely an enlargement or distention of the bursal cavity of the joint, and is filled with the natural fluid of the joint, but increased in quantity, and possibly, in some cases, a little changed in quality also.

(2.) Blood Spavin.—This is the same as bog spavin, but more extensive, and generally involving the hock-joint on its three sides, front, inside, and outside, and giving to the limb a thick, rounded appearance, called thorough-pin, (which see.) The swelling is soft and fluctuating, and indeed there is no perceptible difference in the nature and result of this form of spavin, and the preceding variety,

beyond its being more extensive, interfering, perhaps, with the flow of blood in the sub-cutaneous (under the skin) vein, which is seen in front, and partly to the side of the joint, adding very little to the general swelling.

Causes. Hard work and fast driving, especially when horses are young.

Treatment. The application of the ointment of red iodide of mercury, in the hands of some, has done much good; but the enlargement is apt to return when the horse is again put to work, from the fact that more joint-oil, or fluid is poured out. Acupuncturation, or forcing small steel instruments into the swelling to let out the fluid, is sometimes resorted to, after which a bandage or truss is fitted to the part to press out the fluid that remains, and to cause the adhesion of the parts together. The difficulty in curing soft spavin, is the danger of opening into a cavity or joint containing oil (synovia). An old way of treating such disease, is by striking the parts with a mallet, so as to break the skin, that the fluid can escape; the blow given to the skin being so great as to set up adhesive inflammation, and a closure of the opening.

(3.) Bone Spavin.—Consists in the sprouting out of irregular bony matter from the bones of the joint, preventing their smooth and proper action over one another, and causing lameness. This bony growth sometimes attains a good size, and in some cases we find one or two of the bones only involved; in others nearly all of them are affected. The situation of bone spavin is on the inside, and in front of the joint.

Symptoms. When horses are what is called breeding bone spavin, ordinarily persons think and say the lameness is in the hip, (see Hock) from the action which is reflected by the muscles of the hip at every movement made by the

hock-joint, and from the fact that there is no enlargement as yet in the joint. The horse is lame on starting, but gets better after a little while, and after standing will start lame again. In the stable, he shifts one hind leg after another, and when resting the lame leg, he stands on the toe. Pain and lameness cease when the joint is consolidated, although remaining a little stiff.

(4.) Occult Spavin.—This is a disease similar to bone spavin, the difference being that there is no enlargement of the joint whatever, although the bones of the joint are all diseased, immovable and stiff. This seems to puzzle and perplex horsemen, because they cannot comprehend a bone spavin without an enlargement of the joint outside; and, consequently, the poor horse is sometimes blistered and tormented in every part of the leg, but the right place. The cause, results, and effects of this disease are the same as in bone spavin, excepting that there is no enlargement.

Treatment. For the two varieties of spavin, just described, the treatment should be the same. In young horses, the red iodide of mercury in ointment, is the proper treatment. One drachm of bin-iodide of mercury, and one ounce of lard. Mix, and apply once in a week, and lard the parts once a day, till the next application.

Old horses should have a liniment applied, once every second day, to the parts. Oil of olives, two ounces; oil of turpentine, one ounce; creosote, one ounce; mix. This will relieve the pain, and to a great degree the lameness. Spavined horses should have an extra allowance of feed, to keep them in condition equal to their more healthy and fortunate neighbors.

Specks on the Eye.—(See Eye Diseases.)

Speedy Cut.—This is an injury to the knee from the

shoe of the opposite fore-foot, and is prevented by driving slower, and nailing the shoe on one side only.

Treatment. Apply cold water cloths, and if the swelling does not all go away, follow with the application of the red iodide of mercury, in the form of an ointment, once a week, for a few times, and lard or grease the parts till the next application. Boots are sometimes used as a preventative.

Spleen Diseases.—The diseases of this organ are obscure, and chiefly consist of *enlargements, tubercles, softening, rupture, and tumors.* The symptoms attending these affections are not well marked.

Splint.—A small bony enlargement, situated usually on the inside of the fore-legs, about midway between the knee and the pastern joint. When splint begins to grow, it sometimes produces lameness by stretching the covering of the bone, which, however, soon accommodates itself to the altered structure.

Cause. Working horses when too young, and before the leg and splint bone have become united. Hence, splints disappear when the horse grows older, and the unity of these bones takes place.

Treatment. One or two applications of this ointment: Red iodide of mercury, or tincture of Spanish fly, one ounce; oil of croton, twenty drops. Mix, and apply with rubbing.

Sprains.—By this term is meant partial displacement; the twisting of a joint with more or less injury to the articulations, ligaments, tendons and their sheaths. At times small portions of the bones of the joint are separated. Indeed, every variety and degree of severity is to be seen in sprains of different parts. Every joint is liable to

sprain, but the usual or more common sprains will be found in the pastern or fetlock joint, shoulder and its joint, hock, stifle, back and loins, flexor tendon, suspensory ligaments, etc., produced by a common cause, such as slipping, falling, overwork, the weight of the body, and not unfrequently the load falling upon a part, when not in its proper position for receiving it.

Symptoms. Pain, heat, swelling, tenderness and lameness, more or less severe, depending on the severity of the sprain, and the part affected. In severe sprains, care must be taken to guard against mistakes, and to form a correct judgment of the nature of the injury, whether it be a real or simple sprain, or whether there be fracture or dislocation.

Treatment. Absolute and entire rest, is the principal point to be attended to in the cure of sprains, for a sprain cannot be cured without rest, no matter what other remedies are employed; and, if there be much fever and excitement about the horse, a few doses of aconite will have to be given. Tincture of aconite root, fifteen drops, given three times in the day for two days, will remove fever and irritation. Then apply warm water cloths for three days, followed by cold water cloths for the same length of time, taking the cloths off at night, as it is necessary that water must be poured on the cloths every hour, or before the warm ones become cold, and the cold ones become warm. After which, the lameness and swelling will have ceased; or should this not be the case, apply for a few days, once a day, the following liniment: Creosote, one ounce; oil of turpentine, one ounce; oil of olives, two ounces; mix. Be assured the horse is quite well before he is put to work again, as many joint diseases are brought on by mismanaged sprains, which never can

be cured. For sprains of different parts of the body see Shoulder and Shoulder Joint Sprains, etc.

Staggers.—A disease familiar to every horseman, and of a serious character. It presents different symptoms in different horses, depending altogether upon the extent to which the brain and nervous centres are affected, and whether the variety be mad, grass, stomach, or sleepy staggers.

(1.) Stomach Staggers.—This is an attack of acute indigestion, from overloading the stomach; digestion is arrested, fermentation is set up, and the evolution or giving off of carbonic acid gas distends the stomach and bowels, and presses on the space allotted for the lungs to play in, depriving them of ærating the blood, thereby affecting the healthy action of the brain and nervous centres, and producing death in from twelve to twenty hours.

Treatment. Injections of warm water and soap, and a handful of salt to clean out the bowels, so that the gas can get free passage. Arrest fermentation by dissolving two ounces of the sulphite of soda in a little water, and giving it at one dose, the dose to be repeated every hour. Mix eight drachms of powdered aloes in a little warm water, and drench the horse with it to stimulate digestion, and open the bowels.

(2.) Grass or Sleepy Staggers.—A chronic variety of stomach staggers, and should be treated as the above variety.

(3.) Mad Staggers.—This is inflammation of the brain, and is sometimes called *Phrenitis.*

Symptoms. Dullness, followed by excitement and madness. The sleepy stage, or the congestive period passing off, then the madness is seen. The horse unconsciously throws and dashes himself about, and sometimes endeavors

to climb up the wall. At times, ropes will have to be used to keep him from pulling back, and becoming unmanageable, thereby destroying harness, carriages, sometimes other horses, and even the stable itself. The power of a mad horse is great, and a painful sight to see. Finally he becomes exhausted, falls and dies.

Treatment. The horse is not *worth* saving, and rarely can be saved; for nothing can, or will, give relief to a mad horse, but bleeding, and this to so great an extent that life does not rally, and the horse dies, a dull, stupid, and immovable mass, unable to eat or drink. The brain is pressed with fluid and lymph, between the *pia mater* and the *arachnoid.*

Remove a mad horse, as soon as possible, from anything of value, or that can be broken or hurt. Especially remove him from other horses, so that he may not injure them.

Staked.—An accident to some portion of the body, but most frequently to the belly, occasioned by leaping fences, or it may be by the horn of an ox, cow, or bull.

Treatment. If the injury be at the belly, the wound having entered it to some depth, ascertain, with the finger, whether any portion of the bowels is injured, or has escaped through the opening. If so, and part of them be torn, sew with small, fine, cat-gut, (such as is frequently used by fishermen who employ artificial flies as bait,) and pass the bowel or intestine into its proper place, closing the wound in the same way as is recommended for rupture of the belly, (which see.) If the skin is only wounded, treat it as for simple sore. If the wound is in a fleshy part, and the skin peeled or torn from the flesh, it had better be clipped off, as it will not unite again, but shrink and dry

up; hence, it is neither advisable to let it hang, nor to attempt to sew it. Trim off the fragments of loose skin, and treat the wound with a weak solution of blue stone, chloride, or sulphate of zinc. (See Medicines and Prescriptions, and Bleeding Wounds.)

Stings from Bees, Hornets, etc.—Not unfrequently we hear of horses losing their lives from irritation and fever, originating from the stings of these insects.

Treatment. Take acetic acid No. 8, four ounces; powdered camphor, one ounce; mix, and dissolve, then rub a portion of the mixture into the parts most affected. The poison, swelling, irritation, etc., will be at once arrested. In an hour afterwards, anoint the parts with sweet oil or lard. As acetic acid may not be at hand in an emergency like this, strong table, or white wine vinegar should be used, without the camphor. Acetic acid of French manufacture is eight times stronger than ordinary vinegar.

Stifle-joint Lameness.—In the article on Hock-joint, I have stated that this form or situation of lameness in the horse, is not so common as horsemen and others suppose it to be; nevertheless, no part or function can be declared exempt from accident and disease. It is chiefly, however, an affection of young colts kept on uneven ground, and arises from the wearing away of the toe of the foot, thus inducing dislocation of the stifle, or patella, which slides off the rounded heads of the bones, at every step the animal takes.

Treatment. Remove the horse to level pasture, and have him shod with a shoe, having a projecting piece of iron attached to the toe, which will prevent the bones from sliding out of place, and knuckling at every step.

Stifle Ulceration.—This is a disease of the half-moon

shaped cartilages of the joint, and is a serious disease, as all joint affections commonly are.

Symptoms. The leg is held firmly somewhat in advance of the other, and is thrown outwards at every step. The joint is enlarged, and the capsular ligament very much distended, especially when the animal's weight is thrown upon it, by holding up the sound leg.

Treatment. Not satisfactory; as ulceration is generally progressive in its character, and frequently destroys the heads of the bones. But the ointment of the red iodide of mercury may be tried.

Bin-iodide of mercury, one drachm; hog's lard, one ounce; mix, and apply by rubbing with the hand, once a week, for a month. Lard or oil the parts daily, between each application.

Stomach Diseases.—(See Gastritis Mucosa, Staggers, Colic and Enteritis.)

Stone in the Bladder.—Are those concretions named *calculi*, formed in the bladder from a diseased condition of the urine.

Symptoms. Pain, an occasional stoppage in the stream of the urine before all is passed, and a straddling gait.

Treatment. Is the province of surgery.

Strains.—(See Sprains.)

Strangles.—This is an eruptive fever, characterized by swelling in and between the bones of the lower jaw, terminating in an abscess.

Cause. A specific poison in the blood, which few, if any horses that live ten years, ever escape. It especially attacks young horses, but is often seen in those of increased years. Sometimes, the enlargement or abscess of

the strangles, is seen on the side of the face, and even on other portions of the body.

Treatment. Give the horse grass, or soft feed, and little or no medicine. The appetite will return when the abscess is opened, or breaks of itself. This is the great secret in the treatment of strangles. Do not poultice the swelling, as it will only thicken the skin. If anything is to be done to hasten the abscess, rub in a little of the ointment of Spanish fly. (See Medicines and Prescriptions.)

Stranguary.—This is a name given to the urine, when mixed with blood, and when pain is present while the horse is urinating.

Cause. Irritation of the bladder or kidneys, or both, from the use of the Spanish fly, either in the form of a blister, being too extensive, or too near the loins and kidneys; also, from the fly being given in an improper manner, or in too large doses.

Symptoms. Frequent desire to pass urine, which when passed, is in small quantities, and bloody. Pain, irritation, and fever, are present.

Treatment. To remove the pain, give twenty drops of the tincture of aconite root every three hours, together with plenty of cold water to drink; also flaxseed tea, to horn, or drench down the throat of the horse, and sheath the parts from irritating substances. Take equal parts of good mustard and flour, mix with warm water, make into a soft paste, and lay over the region of the kidneys, or small of the back, occasionally moistening it with warm water, and covering it with a dry cotton or linen cloth.

Strangulation.—This is a term applied to a part which is tightened, contracted, or closed. Strangulation and stricture are terms implying different degrees of the

same phenomena. Thus we speak of strangulation of the bowels from rupture, and of the glottis or head of the wind-pipe, when, from some cause or other, it is closed. Death of the horse is the result, if no opening be made lower down in the wind-pipe, to admit atmospheric air. Stricture is that condition of the wind-pipe or glottis which when contracted or pressed upon by enlargement of the glands of the neck, or thickening of its own membranes, diminishes the space or width of its calibre, giving rise to thick wind and increased breathing and cough.

Stringhalt.—This is an affection of the hind leg, and is known from the peculiar way in which the hind leg or legs are raised from the ground—a quick, spasmodic jerk.

Causes. These are two fold. *First.* The loss of nervous influence, whereby the *extensor pedis* muscle—and possibly some others—is deprived of its proper power. *Second.* The peculiar anatomical articulation and general structure of the hock-joint of the horse are such that when the leg of a *dead* horse is stripped of its muscles the ligaments are not disturbed at all; and if the legs above and below the hock be caught hold of by the hands, and the leg straightened out, the moment the hands are taken from it, it will *spring* into a bent position, thereby imitating stringhalt, as near as can be. Thus the balance of power is not equal; the articulary ligaments of the hock are stronger than the muscles of the thigh. Hence, the moment the horse lifts his foot from the ground, the leg is *snatched* up by the power of the articulating ligaments.

Treatment. Restore the lost nervous influence; thereby the muscles of the thigh are to be brought into healthy action. This will best be done by good feeding, and one grain of strychnia nux vomica given daily, for six weeks, in the horse's feed.

Stumbling.—Veterinary writers are nearly all silent on this subject, while those who say anything about it call it a *habit.* In this we cannot coincide with them, but regard it as a nervous affection—a nervous debility resulting in atony of the flexor muscles of the shoulder. A stumbler is unsafe, either for riding purposes, or for use in single harness when attached to a two-wheeled vehicle. Can such an animal be classed as *sound?* We think not!

Sunstroke—Coup de Soleil.—This disease of late years has become of such frequent occurrence, that although not mentioned by previous veterinary writers, it demands a notice from us. The chief symptoms are exhaustion and stupidity, the animal usually falling to the ground and being unable to go further.

To prevent it, allow the horse at short intervals a few mouthfuls of water, and fasten a wet sponge over the forehead. The sun-shades now used by extensive owners of horses, will go very far in lessening the occurrence of this affection.

The following *treatment,* when attended to at once, in the majority of cases, will prove effectual:

First. Remove the horse from the harness to a cool, shady place. *Second.* Give two ounces of sulphuric ether; twenty drops of the tincture of aconite root, and a bottle of ale or porter as a drench to sustain the vital powers, and to act as a powerful stimulant in equalizing the circulation throughout the body; whilst, *Thirdly.* Chopped ice should be placed in a coarse towel, cloth or bag, and laid between the ears and over the forehead, secured in any way the ingenuity of the person in charge may suggest. If the legs be cold, bandages will be of advantage. Do not put the horse to work again until he is completely restored. Dumbness is the usual result of sun-stroke—a species of

coma—for which there is no cure. Horses so affected are of little use in warm weather, but are useful in winter.

Suppuration.—This signifies the secretion of pus, and is one of the terminations of inflammation.

Symptoms. Whenever suppuration is going on to any extent in or on the body of the horse, a shivering fit, similar to a chill, will or may be seen, followed in a day or so, either by the discharge of a yellow pus from the nose, or the formation of an abscess on some portion of the body. Suspect suppuration when rigors and shivering occur, especially after accidents of whatever kind.

Treatment. First. Support the strength of the horse by good feeding, whereby the process will soon be over, and without any complication with it. *Second.* Do not physic or bleed, for those measures would prevent the process of suppuration from going on in its original place, and, perhaps, drive it to another. (See Metastasis.)

Surfeit.—(See Skin Diseases.)

Swelled Legs.—(See Grease, Sprains, Debility, and Dropsy.)

Swellings.—These are of different kinds—the hard, inflammatory swelling caused by injury, suppuration, and diseased bone; the soft and fluctuating swelling, which is generally circumscribed, and seen in diseases of the joints, as blood spavin, etc., and contain joint oil; the dropsical, or soft and *non*-inflammatory swelling of many and different parts of the body, at one and the same time. Each must be treated according to the cause of the swelling. (See Farcy.)

Sweenie.—This word or name is so deeply buried in obscurity that researches in every quarter have failed to

discover its origin, or secure to it a satisfactory resurrection. It applies, however, when used by horsemen, to a falling away or shrinkage of the muscles of the shoulder, and indicates not so much a lameness in the shoulder as it does a disease elsewhere—in the foot or leg, as corns and disease of the pastern joint. ATROPHY should be substituted for sweenie, as it is generally sympathetic, and, moreover, means that the body or a part is diminishing in bulk.

Treatment. Remove the cause of atrophy or sweenie, and the effects will pass away.

Sympathy.—That condition which is developed in one part of the system or body of an animal, although not of itself a disease, but is the result of disease or accident happening to some other, or remote portion of the body. This sympathy is communicated through and by the nervous system. A nail in the foot, or a broken bone, is immediately followed by sympathetic fever, and general disturbance of the whole system. Herein lies the great difference between animal and vegetable life. A branch of a bush or a tree can be lopped off without any disturbance to the life or health of the main trunk. No such immunity exists in the animal creation.

Synovia.—A clear, colorless and viscid fluid, secreted by the lining membrane of the joints, for the purpose of preventing friction, and allowing an easy motion of the heads of the bones over one another. Synovia sometimes changes in quality, becomes thinner, and gives rise to swellings of the joints. (See Blood and Bog Spavin.)

Synchronous.—This name is applied to the action or beat of the heart, when it is in time with the beat or pulsation of an artery.

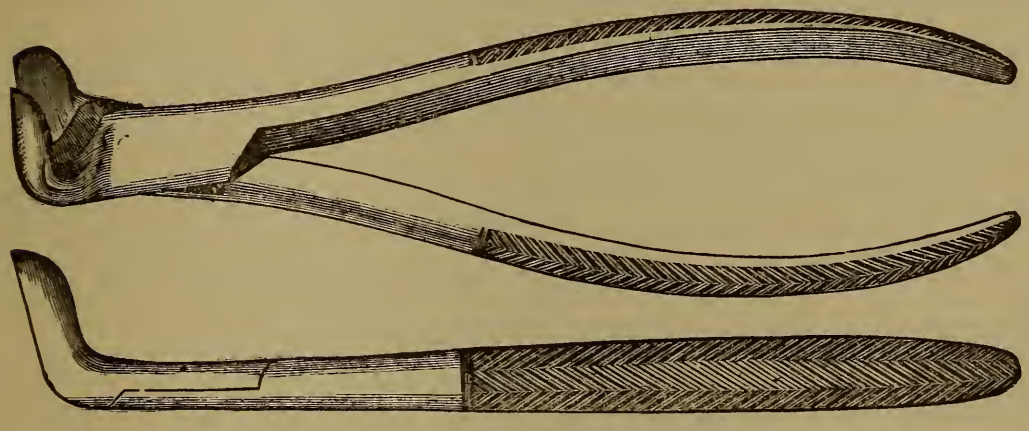
Systole.—The movement or contraction of the heart, as the systolic murmur.

Tabanidœ.—A species of fly which are a great annoyance to horses.

Tabes.—Wasting of the muscles of the body. (See Mesenterica.)

Talpæ.—A wart-like tumor, easily removed with a sharp pair of scissors.

Teeth.—(See Mouth Diseases.)



TOOTH FORCEPS.

Tetanus.—(See Locked-jaw.)

Tetter.—(See Skin Diseases.)

Thick Wind.—(See Heaves and Broken Wind.)

Thick Leg.—(See Grease and Farcy.)

Thiselo.—(See Fistula.)

Thoroughpin.—An affection of the hock-joint, accompanying bog and blood spavin, characterized by soft, fluctuating swellings, containing fluid or joint oil in increased quantity, and an altered quality.

Treatment. The same as for bog or blood spavin, (which see.)

Thread Worms.—(See Worms.)

Throat Diseases.—(See Bronchitis, Cold, and Catarrh.)

Thrush.—(See Foot Diseases.)

Thrombus.—(See Jugular Vein.)

Thumps.—This is spasm of the diaphragm, or the curtain which hangs down and separates the cavity of the abdomen, or the belly from the chest.

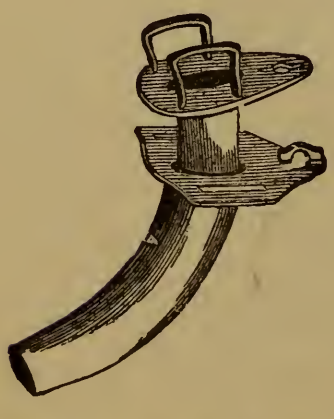
Cause. Over driving and oppression, paralyzing the accessory nerve, and hence the flapping of the diaphragm.

Treatment. Place the horse in a cool, airy place, and allow him plenty of cold water, and if the noise, after an hour or so, does not subside, give two bottles of ale or porter as a drench.

Tongue, Laceration of the.—(See Mouth Diseases.)

Tonics.—(See Medicines and Prescriptions.)

Toxicology.—(The science of poisons, and their antidotes.)

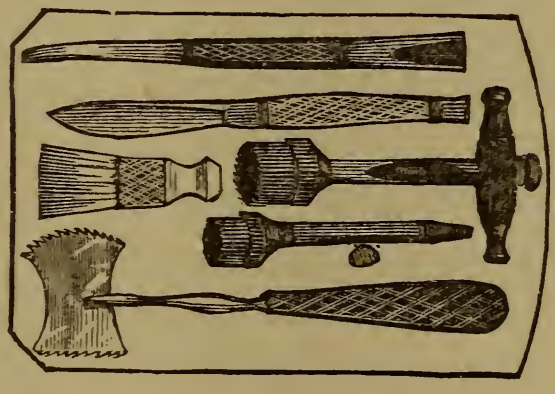


TRACHEOTOMY TUBE.

Tracheotomy.—An operation to open the windpipe, in cases of closing of that tube by tumor, or thickening of its membrane. It is an operation rarely required, and moreover, not to be attempted by a *non*-professional person not acquainted with the art and science of surgery. Therefore, we will forego a description of it.

Transfusion.—This is the act or operation of transferring the blood of one living animal into the vascular system of another by means of a tube. Mr. James Farrel, of Dublin, Ireland, was the first veterinarian, to my knowledge, who employed transfusion to any extent, and to excellent advantage. In cases of debility from blood letting, he has done wonders with it, and has conclusively proved to his countrymen the danger of bleeding horses to cure or prevent diseases. For, in such cases as had not been bled, he had no trouble; but, in those which had been bled before he was called to them, every one died. Hence he resorted to transfusion, in order to save others that had been treated by bleeding. The effect of transfusion is almost instantaneous.

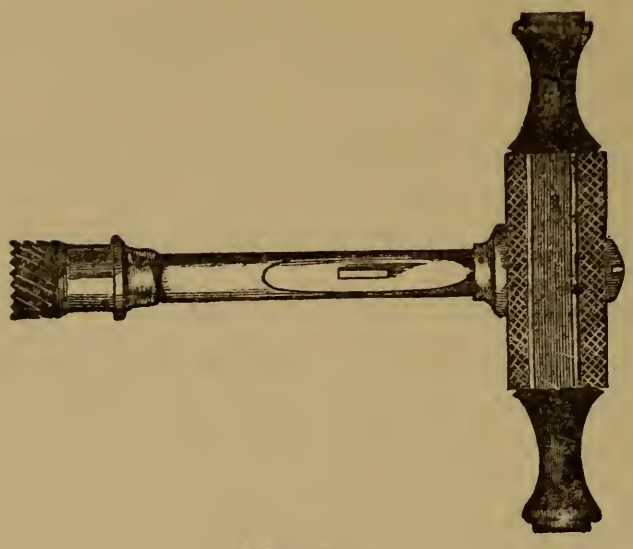
Tread.—(See Foot Diseases.)



TREPANNING INSTRUMENTS.

Trepanning.—This is an operation for opening into the bones of the head or face to elevate or raise a portion of bone which from accident has been depressed or fractured. The instrument used for this purpose is called a Trephine.

It is designed to cut out a circular portion of the bone, so that a smooth piece of iron is inserted in the hole, and



TREPHINE.

used as a lever to raise the depressed portion to its proper level.

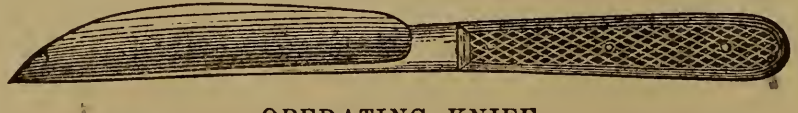
Trismus.—(See Locked-jaw.)

Tubercles.—(See Glanders.)

Tumors.—Tumors may be defined as circumscribed swellings of different sizes, without inflammation, and differing from one another, according to their situation and their nature.

(1.) Encysted Tumors.—This is a variety of tumors often seen about the side of the nose of the horse. It is about the size of a pullet's egg, soft, and elastic to the touch, with no heat, inflammation, or soreness of any kind.

Cause. Closing of the sebaceous openings of the part. Hence the elevation, swelling, and filling up of that portion of the skin which contains the sebaceous or suet-like matter.



OPERATING KNIFE.

Treatment. Open the part with a knife, and inject for a few times into the inside of the tumor a teaspoonful of

the tincture of iodide, to kill the walls of the cyst. The surgeon sometimes cuts these tumors out, in the form of a soft ball, without opening them. This requires a steady hand.

(2.) ENCEPHALOID.—This term means a brain-like tumor, so named from its structure being like that of the brain. It is one of the kinds of cancer which sometimes attack the horse, but is more frequently seen in the dog and ox.

Cause. A specific poison in the blood, not as yet well understood.

Symptoms. It is solid, hard, irregular in shape, and knotty, with no hair upon its surface, and presenting a smooth and shining aspect. These tumors grow rapidly, and finally break on the top, presenting an angry and malignant sore or ulcer, which cannot be healed without first removing the entire tumor, with a knife, and treating it as for a simple sore.

(3.) FIBROMA.—This is a fibrous or warty-like tumor, familiar to most persons, and is attached chiefly to the skin only. It is troublesome only in so far as it is apt to bleed, thereby keeping up a degree of irritation—especially in warm weather, because of the sweat and the flies.

Treatment. Those persons who have not sufficient nerve to cut them off with the knife, can take arsenic, one drachm; hog's lard, four drachms; mix, and make an ointment; rubbing in and around the tumor, once a week, a small portion of the salve. In a short time it will fall off.

(4.) FATTY TUMOR.—This is a variety of tumor of frequent occurrence in horses, and is composed of fat as its name indicates. It is sometimes called adipose and lipoma by the surgeons of continental Europe.

Symptoms. A round, ovoid shape, with a firm feel, but

not hard nor elastic, or at least not so much so as the encysted form.

Treatment. Take a sharp knife, and after getting a twitch upon the horse's nose, and one of the fore legs held up, make a straight cut over the centre of the tumor through the skin only. Then roll out the ball of fat with the fingers; the knife here is of no use. The simply opening the skin, and rolling out the fatty tumor, is called occlusion, and when cleverly done, looks well.

(5.) CANCEROUS.—(See Melanosis.)

(6.) MELLANOID.—(See Melanosis.)

(7.) BONY TUMORS.—A species of tumor attacking the bone, and is called *osteo-sarcoma*, (which see). When attacking the head, it is called *osteoporosis*, (which see).

(8.) VARICOSE.—The horse is not often the subject of varicose tumor of the veins, simply from the fact that no garters or other ligatures are tied around the legs, interfering with a free circulation. The *saphena major*, however, is the only vein liable to varicose, arising from bulging of the hock-joint, and in cases of bog and blood spavin, and thorough pin, (which see).

Tympanitis.—This term means drum-belly, such as occurs in cases of flatulent colic, (which see).

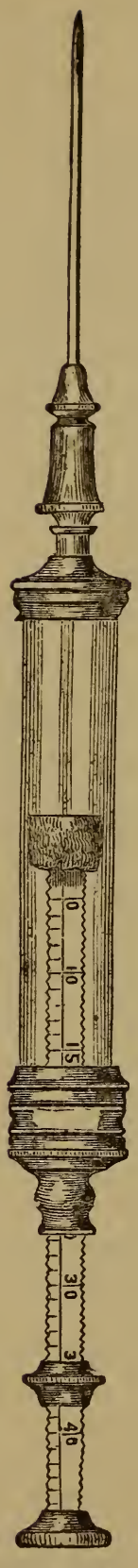
Typhia—Typhinia—Typhus.—These are continued fevers, and are lit up and fed by a specific zymotic matter in the system which is generated when horses are badly fed and crowded together in an inadequate supply of air. The fevers of glanders, farcy and pyemia are good examples. The seeds of the disease can only be got rid of by the effectual destruction of the typhinia—its existing ferment or leaven. (See Glanders.)

Typhoid.—A low form of disease, accompanied with

fever. Example, Influenza, or catarrhal fever. (See Influenza, and Gastritis Mucosa.)

Typhosus.—A species of fever at present, perhaps, not very clearly defined, and consequent upon changes that have taken place in the blood of horses—a blood disease resulting in nervous prostration. It is comparatively a new disease, and is, in different parts of the country, called and known by various names, according to the chief symptom there observed. It is known in New York as *cerebro* spinal-meningitis by those who have seen the disease, because it is thought to be like when a man is affected in the meninges—or membranes which envelop the brain and the spinal marrow—producing *choking distemper, putrid fever, paralysis of the par-vagum*, or pneumogastric nerve, on account of the chief symptom being the inability of the horse to at least *voluntarily* swallow.

The Symptoms of this affection in the horse are at first or in the early stage very latent or hidden. The chief of them is in the quiding of the food, as the holding it in the mouth and refusing to swallow; also, by placing a bucket of water or other fluid within reach of a horse so affected, when he will place his mouth into and agitate it, going through the process of deglutition or swallowing without consuming. This has been the *great* symptom with those on the Delaware River, at Wilmington, Odessa, Smyrna, Bombay Hook, and also at Cold Spring Harbor, Long Island, New York, in the year 1867, when and where my advice and services were required. The inability to swallow continues for some days, when, from loss of sustenance and change in the circulating fluid, the horse lies or falls down exhausted. It should be observed that while the horses on Long Island, and on the Delaware



HYPODERMIC SYRINGE. (See Endermic.)

flat lands could not voluntarily swallow, they were enabled to do so when drenched out of a bottle, with their heads elevated. This peculiarity, however, may be ascribed to gravitation having its own way, and to relaxation of the paralyzed muscles of deglutition, which, though offering no assistance, interpose nothing. Those cases that seem to live but a few days, as is related by some persons, die because the symptoms are not observed until weakness and consequent inability to stand force themselves to recognition. There are other symptoms that we might mention, but they are alike common to all diseases of an *asthenic* or low or depressed type. It is a disease wherein the *vis vitæ* is extremely low, and it is consequently very fatal—time not being allowed in many instances for the treatment to supply, through it and the vis à Tergo, the elements of nutrition.

Treatment. In a disease of this kind, where nervous force is almost gone, we suggest the diffusible and more fixed stimulants, with carminitives and tonics—which are embraced in the following formula, to be given, mixed in a bottle of cold water, five times in the twenty-four hours: Powdered carbonate of ammonia, three drachms; powdered capsicum, two drachms; powdered pimenta berries, four drachms; tincture of nux vomica, twenty drops; mix. Drench the horse with cold water several times daily, adding sixty drops of commercial sulphuric acid to assist in sustaining the flagging

powers of life. Corn meal may also be given in the same way, and for a like purpose.

By way of experiment, galvanism or electricity may be employed over a blistered surface made along the pneumogastric nerve on each side of the neck. Injections endermically—under the skin—with strychnine may result in gaining time for other measures to become effectual as a cure.

The cause of this disease in horses does not differ, we think, materially from those that give rise to like diseases in men; for on the shore opposite to Long Island in 1867, and at the very time horses were affected with the disease, over 400 deaths were recorded in the human family from an affection similar to paralysis.

The prevention of this disease, like many others that affect domestic animals, is more easily accomplished than the cure. Use dry stables; also good feed, in which a drachm or two of the sulphate of iron, or five grains of *arsenic* should be mixed, and given once daily, when such diseases are in the vicinage, for eight to ten days at a time.

Ulcers.—I do not intend to speak of *internal* ulcers, as of the brain, chest, or belly—they being beyond the skill of the most learned, much less the non-professional reader—but will confine myself to *external* ulcers, as of the skin and flesh.

(1.) HEALTHY ULCERS.—These are generally the result of an accident, or incision with a knife, or other instrument. Every sore which does not heal by what is called the first intention, but suppurates, is called a healthy ulcer.

Treatment. Most healthy ulcers will heal of themselves: at most all that is required to be done, especially in warm weather, is to keep the granulations (which see,) from

growing too fast, and above the level of the skin; and for this purpose apply a solution of blue stone, or chloride of zinc as follows: Chloride of zinc, four grains; rain water, one ounce; mix. Or, powdered blue stone, two drachms; rain water, eight ounces; mix. One of these mixtures may be applied once a day, just sufficient to moisten the sore, and keep proud flesh down. The simple ointment of the drug stores is a good healing salve, and should always be in the house and at hand.

In neglected sores, and when proud flesh has grown up above the level of the skin of the healthy part, take a stick of caustic potassa, and hold one end with a piece of cloth, or stick one end in a goose-quill, and touch the sore with the other end of the caustic a few times, till the proud flesh turns black. Repeat at another time, if necessary. Keep the caustic in a tightly-corked bottle, or else it will be dissolved into fluid when next wanted.

Sewing the lips of wounds and sores together is not now much practiced, as the stitches are apt to rot, and the parts swell, in consequence of which the sewing gives way, thereby aggravating the sore.

Adhesive plaster is also not advisable, as, when it is put on over the sore, it prevents the proper fluids thereof from being discharged, and the moisture serves to loosen the plaster.

(2.) INDOLENT ULCERS.—This variety of ulcer or sore usually attacks the skin of the legs and heels of horses, (see Phagadena, Grease, and Farcy,) eating down into or below the surrounding surface. It is covered with a whitish-gray matter, and, in some few cases, small red spots are seen looking through the white covering. These are granulations, and are possibly unhealthy ones. (See Frost Bites.)

Cause. A bad habit of the body and blood; poor feeding, and debility.

Treatment. Apply powdered blue stone to the ulcer, to eat off the unhealthy surface. Then apply a poultice for the night, made of any soft, moist material—say boiled turnips, carrots, or bran and flaxseed meal, made with a little warm water. The face of the poultice should be covered with powdered charcoal or brewer's yeast. Continue the treatment with an occasional poultice, and the solution of blue stone.

Feed the horse well, and give half-ounce doses of the sulphite of soda, once a day, to purify and enrich the blood.

(3.) IRRITABLE ULCER.—Example: Sores on the pastern-joint irritated by the flies, heat and sweat of summer.

Symptoms. Cannot be touched without they bleed; angry-looking, and very sore; highly inflamed, and extremely vascular.

Treatment. Difficult to cure during warm weather, but easily healed in moderate weather, when there are few or no flies.

Dress the sore with oil of olives, one ounce; creosote, half an ounce; oil of turpentine, half an ounce; mix, and apply to the sore with a piece of soft cloth, once a day. Do not let any of the mixture run down on the hair, which will, if so treated, fall off.

Urinary Calculi.—(See Stone in the Bladder.)

Urine, Bloody.—(See Hæmaturia.)

Varicose.—The enlarged vein on the hock-joint, caused by bog and blood spavin. (See Spavins and Tumors.)

Venesection.—Bleeding by opening a vein.

Ventilation.—Few persons are aware of the vast

importance of pure, fresh air, in the maintenance of health, and the prevention of disease, in both man and beast. However necessary pure air is in health, it is still more so to an animal when sick from fever and disease; and indeed there are diseases in which no treatment can or will be successful, no matter how skilfully directed, without pure, fresh air and cold water to drink. Show me a badly ventilated stable or barn, and I will show you in the spring of each year horses fevered and diseased. (See Disinfectants.) Coughs, colds, lung fever, influenza, grease, scratches, farcy and glanders, are the results of bad ventilation.

Who has not heard with horror of the BLACK HOLE AT CALCUTTA, in which one hundred and forty-six men were confined for a few hours without ventilation, and only twenty-three survived the short confinement. Horses confined only for a few hours without ventilation, as was the case in two military expeditions sent out by England—one to *Quiberon*, and the other to *Varna*—in which the hatches of the ships were put down, and only for a short time, but sufficiently long to produce glanders in almost every horse. Hence, it will be perceived that, without good ventilation, a high standard of general health cannot be maintained very long.

Veterinary Biography.—The increased facilities for receiving and transmitting intelligence in all parts of the world, make it desirable in a book, designed, as this is, for the non-professional reader, that something should be said of the persons, whose opinions have had some weight, concerning the cause, treatment and prevention of diseases of stock, throughout the world. The history of veterinary medicine, has a claim to greater antiquity even than that of domestic medicine, which few will deny; or else why

should Vegetius have uttered these words:—"*Ars veterinari post medicinum Secunda est,*" and write a book in VIII volumes, entitled "*De arte Veterinaria.*" And further, we are assured through the writings of Homer, 1000 years before Christ, that this science had an existence in his day; and this is also corroborated by Herodotus 500 years later. Simon, the Athenian Farrier, was practicing the art as it then existed, fully 300 years before Galen, and about 500 years before Celsus, the Roman physician, had yet lived. It was by order of the Greek Emperor, Constantius, of the seventh century, that the various writings upon the subject were collected, and arranged under the title, Hyppocratika, and were translated from the original Greek into Latin, by Dr. Ruelle, in the latter part of the fourteenth century, by order of Francis the First, King of France. Ramazzini, of Italy, Sauvage, of France, and Camper, of Germany, form the connecting link between ancient and more modern times—or to the advent of Charles Vial de Sain Bell, the founder of the first veterinary college in England, in the year 1792. Sain Bell was a man of ability, a good reasoner, clever, and very brilliant. He died before much progress had been made in establishing the college. He was succeeded by a dashing young medical student named Coleman, a favorite of Sir Astley Cooper, the great surgeon; but it is by no means clear that he was regarded, by the celebrated John Hunter, as filling the chair of so illustrious a predecessor in a satisfactory manner. However, he was the means by which veterinary science made considerable progress. The grave, some years ago, closed over his mortal remains; but his writings are much thought of, and quoted by some although many other writings, more modern, are in the hands of the public.

Where there was but one great teacher, there are now many, and able. Among them is Wm. Youatt, who is known wherever the English language is spoken. He is a clear and indefatigable writer, and a great and constant advocate of bleeding, and blistering, in nearly every disease. Many publishers and others have tried to elevate his works to the new idea of a rational and successful system; yet, withal, much inconvenience and loss, to the agriculturist, has resulted from consulting his works, in cases of sickness and disease. He was a bold and daring man. Many times he allowed himself to be bitten by mad-dogs, and, strange to say, never suffered from canine rabies.

James Beart Simmonds, who is still living, is known in this country by his report, to the British Parliament, on the rinderpest. He is professor of cattle pathology to the Royal Veterinary College, and a man of ability.

Charles Spooner, principal of the college known to the readers of the Royal Agricultural Society's Journal, is also prominent. The Scotch are well represented by Professors Dick, Dun, and Gamgee. Mr. Dick is the founder of the present Edinburgh College, and veterinarian to the Highland and Agricultural Society. Mr. Dun is sound, and learned, and has carried off more prizes on veterinary agricultural subjects, than any other man. The Irish agricultural interests, are protected by Messrs. Ferguson, and Farrel. Edward Mayhew is an invalid, and has confined himself to book-making. He has shown the world well, how a man may write books, when he knows nothing of the subject he is writing about. In his works, the book-making tact is seen to advantage, and they bear many evidences of cleverness.

France is well and creditably represented by Reynal and Boulay; and Germany, by Herring. The United

States has made great progress in veterinary science, within a few years, and especially in regard to the treatment of disease. The various State agricultural societies, and farm schools, are doing much in the way of advancing the cause of a rational system of animal medication, throughout the land. The Philadelphia Society, for the Promotion of Agriculture, the oldest society of the kind in the country, has long been a powerful patron of veterinary science.

The Pennsylvania Farm School orders a course of lectures to be delivered before the class, each session. The New York State Agricultural Society's efforts are gigantic, practical, and in the right direction. The secretary, B. P. Johnson, Esq., is well known throughout the country, as devoting his life to the cause, and advancement of agriculture, in all its auxiliary branches. Massachusetts has spoken no less ably through Mr. Flint, her secretary. Ohio, and other States of the Union, might be named in this connection, but space will not permit.

Veterinary Colleges.—These do not seem to flourish in this country; many have been started, but most of them have been closed for want of patronage. Prof. McClure in his earlier years, conducted very successfully in Philadelphia, the "Merchants' Veterinary College;" but the leading veterinary school in America at the present day is the Veterinary Department of the University of Pennsylvania under charge of Dr. R. S. Huidekoper.

Veterinary Surgeons—Veterinarians.—Terms in use or applied to persons whose calling is to cure diseases among domestic animals. Veterinary surgeons are not unlike domestic physicians—many of whom are mere apologies in their profession. This is not so because of inferior education to those who have risen to distinction as

successful and skilful in practice, but chiefly from a want of natural adaptability to the profession they have chosen, mistakably for themselves, and a source of disappointment to their patrons.

Thus Mr. Greaves, of the London College of Veterinary Surgeons, and one of the most expert and successful members of his profession to be found in any country, says in the *Veterinarian*, (periodical) that among the certified pupils leaving college, many cannot even tell which leg a horse is lame in. Again, he says that on account of this, and the want of confidence of the public in them, the *practical* man, though ignorant, is preferred to the practitioners who write M. R. C. V. S. L. after their names. To insure a uniform standard of efficiency in veterinarians, it is now customary to make a preliminary examination of each person before admission to studentship. This examination is not in the abstract sciences, but in those matters, the possession of which, when put together, form common sense, or a good judgment of things and phenomena. It is for the want of such merit in the purely scientific, that little or no room is left for practical matters and their application.

The *science* of Gamgee did not discover the cause of Texan Fever; whereas, we think if he had but stooped to look at *common* and unhidden things, the apparent mystery would ere this time have been closed up. We would not, however, under-rate science; for when it is associated with good judgment, it is the key to success in veterinary medicine and surgery. We desire to add, in this connection, the lamentable fact that in cities and large towns, and indeed all over the country, persons will be found who call

themselves veterinary surgeons, and practice as such without qualification—having neither legal, moral, nor educational attainments.

Vives.—A term given to bastard, or an irregular variety of strangles. (See Strangles.)

Warts.—(See Tumors.)

Warranty.—A form of certificate given on the purchase or payment for a horse. There is nothing mysterious, nor yet of much importance, as to the form of a warranty. The best forms amount to nothing, in the eyes of the law. Horses are like other merchandise. If not as represented, damages or difference in value can be obtained by a process of law, providing the seller can be found, and has property which can be levied upon. 'Tis true, in such a case, an action in *tort* may be brought whereby if payment is not made, he can be sent to prison for awhile, or till he can claim the benefit of the insolvent act.

Few persons will bring an action at court for swindling, or getting money under false pretences, by horse dealing, for it will be difficult to maintain such an action, and get a verdict upon it. (See Soundness.)

Warbles.—(See Skin Diseases.)

Water Farcy.—(See Dropsy and Farcy.)

Weeping Eye.—As its name indicates, this is a flow of tears from the eye down the side of the face, instead of through their proper channel.

Cause. Obstruction in the lachrymal sac, or nasal duct, from a disease called *fistula lachrymalis.*

Treatment. This is the province of the surgeon and anatomist.

Wens.—The common name for external tumors.

Wheezing.—This is a sound given from a horse having enlarged glands, or thickening of the membrane of the wind-pipe, or the glands pressing upon the head decreasing its calibre. Whistling is caused by the same alteration of structure in the wind-pipe.

Whirl-Bone, a Sprain of the.—(See Sprains and Hock.)

Wind Galls.—Are soft but elastic swellings or enlargements. They are non-inflammatory in character, and are produced by the same cause, governed by the same laws and present the same phenomena as bog, blood spavin, and other enlarged or distended bursa of joints, which are all produced by, and are evidences of hard work. No treatment for them will be satisfactory, as they will return again, even if they have been removed.

Wind-Sucking.—(See Crib-Biter.)

Worms.—The worms which inhabit the body of the horse are of many varieties. Some of them are harmless, while others interfere with his health. They are, 1st. The bot or *œstrus equi*, found inhabiting the stomach. 2d. The *œstrus Hœmorrhoidalis* or *Fundament* bot, found in the rectum, and often seen about the anus, and under the tail. 3d. The *strongylus, and Filaria*, found in the aorta, and other blood vessels. 4th. The *ascarides vermicularis*, found in small cells within the mucous covering of the cœcum, or blind gut. 5th. *Filaria*, found in the aqueous humor of the eye.

(1.) Stomach Bot.—These worms are the result of turning horses out to pasture in the summer months, and are produced from the eggs laid or glued to the fore legs of the horse, by the bot fly.

Symptoms. An unthrifty coat, and loss of flesh after a

run at grass, may be taken as an indication that bots are present within the stomach.

Treatment. Improve the condition of the horse, so that the debilitating effects of the bots' presence may not interfere with the general health and condition of the horse; for it must be borne in mind that *no* medicine can, or will, dislodge or destroy these parasites short of killing the horse, also. Once the eggs are in the stomach, which seems to be the natural *nursery* both for their protection, and the propagation of their species, they cannot be removed by force. In one year from the time the eggs are taken into the stomach, will the bot be a perfect chrysalis, and will fall from the coats of the stomach, and be expelled with the excreta or dung. In a short time after, it will be provided with *wings*, and fly about, commencing the propagation of its species, which must pass through the same period of probation or incubation, as its progenitors. Give iron and gentian, in addition to good feeding, to prevent the bots from debilitating the animal too much. Take powdered sulphate of iron and gentian root, each three drachms; mix, and make one dose, to be repeated twice a week.

(2.) Fundament Bot.—Like that of the stomach, but also the result of a run to the grass. Instead of the eggs being deposited upon the legs, they are stuck to the muzzle or lips of the horse, and are the color of the skin, hence not often seen.

Symptoms. The following year, during the summer months, the *larva* of this species will be seen sticking about the anus, and under the tail, which in spirited horses prove a source of great uneasiness and irritation.

Treatment. Injections of linseed oil, or tobacco smoke.

(3.) STRONGYLUS.—This variety, and a species of Filaria, are sometimes found in the blood vessels, and are similar in the effects produced in the horse, to those seen in sheep affected with rot.

Cause. Feeding on wet and marshy land, and pasture having been flooded with water. Who has not heard of the effects produced from this cause, in animals grazed upon the course of the river Nile, in Egypt, after each inundation?

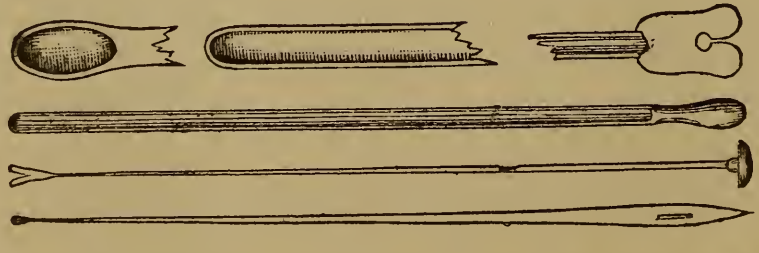
Treatment. Support the strength by good, generous feeding, and give iron, and gentian, each two to three drachms, once a day, removing the animal to high and dry pasture.

(4.) ASCARIDES.

Cause. A bad habit of body, called cachexia and chlorosis.

Treatment. Give iron, gentian and arsenious acid, in the following manner: Powdered sulphate of iron, two drachms; gentian root, two drachms; arsenic, five grains; mix, and give in one dose in mixed, cut or soft feed, twice or three times a week.

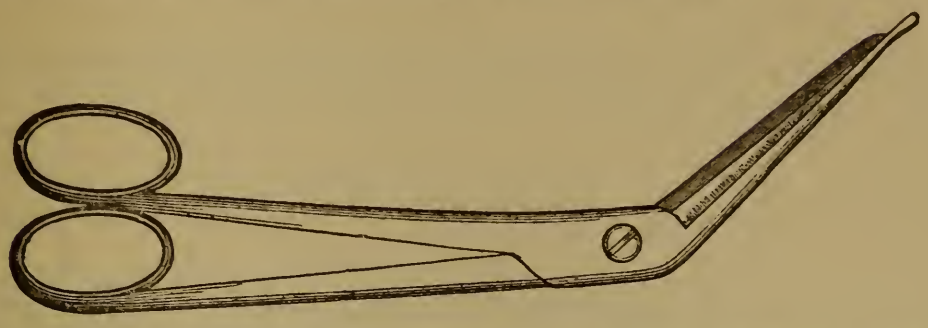
Wounds.—They are divided into simple, incised, contused, lacerated, punctured and poisoned. Wounds are



DIRECTOR AND PROBES USED IN THE CURE OF WOUNDS AND SORES.

more or less dangerous, when entering the chest and belly; as are also poisoned wounds, or those from the bite of a mad dog. (See Bites.)

Wounds following by bleeding, will be found treated of under the article on Bleeding, (which see.)



CURVED AND PROBE PAINTED SCISSORS FOR DRESSING THE CAVITIES OF WOUNDS.

Contused, lacerated and punctured wounds are generally followed by suppuration, (which see) which should be encouraged by warm poultices applied to the parts, and should be kept freely open to allow the pus free escape. Wounds entering the belly or chest, should be treated by placing a pad over the part to exclude the air, followed by the application used in simple wounds. Keep down pain by giving twenty drops of the tincture of aconite root, three times a day, for two days only. Poisoned wounds will be found treated of under the article on Bite of Mad Dog, (which see.)

Wourali.—A name given to a poison, which is prepared by the Macousi Indians, of South America, and used by them on the points of their arrows. This poison has been advocated by some in the treatment of locked-jaw, in the horse, but in my experience nothing favorable can be said of it as a cure for this terrible disease. The power of this poison is so great, that in four minutes after an ox, of one thousand pounds weight, was pierced in each thigh by an arrow poisoned with it, the poison took effect, and in a few minutes more his head and legs ceased to move. In

twenty minutes from the time he was wounded, the ox was dead, having apparently died without pain.

Yellows.—Discoloration of parts of the skin from liver disease. (See Liver.)

Yellow Water.—(See Liver Diseases.)

Zoology.—That part of natural history which treats of the structure, habits, classification, and habitations of all animals, from man to the lowest of all the tribes.

Zumins.—Are Ferments.

DISEASES OF CATTLE.

This part of our work is devoted to the explanation and treatment of the various diseases affecting the ox, together with an account of the diseases incident to milch cows and young calves.

Cattle diseases are, in many particulars, similar to those of the horse. Thus inflammation, irritation and fever, are common to all animals. Still, however, there are many diseases affecting cattle, in which we fail to find a counterpart in any disease attacking horses. Among such diseases we may mention those of contagious typhus, or *rinderpest;* epizootic aphtha, or the *murrain; splenic* apoplexy and *quarter evil*, or the black leg.

The manner or mode of treating disease in the ox differs no more from that employed in the case of the horse, than one disease differs from another. For it must be remembered by every person who undertakes to give medicine to an ox or a cow, that they have *four* stomachs—1, the *rumen*, or *paunch;* 2, the *reticulum;* 3, the *manyplus;* 4, the *abomasum.* For this reason, or, as it were, peculiarity, cows or oxen should, under every condition, be treated

with medicine in a *fluid* form *only*, so that it may pass from one stomach to another without injury, and in the shortest possible time. By giving medicine in the form of a *solid*—as is sometimes given to the horse—in place of its finding the way into any of the stomachs, it is more likely to break through the *floor* of the *œsophagean canal*, (a platform at the bottom of the gullet) thus not only losing the medicine, but at the same time destroying the animal.

In cases of abscess, tumors, sores or ulcers, etc., in cattle, and where the description and treatment is not full enough, or not given at all, the reader is requested to turn to the Diseases of the Horse, in the preceding part of this work, where he will find ample information upon these subjects.

(1.) **Abortion.**—An affection peculiar to cows, and chiefly attacking those that are kept in the neighborhood of cities and large towns, and in the vicinity of cheese factories. It is rarely seen to any extent in the herds of the breeder and agriculturist. It consists in the cow parting with her calf at any time between the first month of conception and the last month of gestation.

Premonitory Symptoms. By these the event is at times clearly foreshadowed. They are extremely deceptive and uncertain, however, and differ materially with the cause of the trouble. In those cases which resemble an epizootic (epidemic) disease in their course, a short, inaudible, involuntary cough is observed, while, by auscultation of the neck, a slightly roughened sound will be heard in the bronchia, accompanied by weakness of the body. Indeed, the symptoms of this occurrence, when not of *sporadic* origin, are weakness and debility. This debility and weakness, to most persons, will prove deceptive, because the blood is, or has gone under a morphological change; and then, and

then only, do the calf attachments to the womb or uterus of the mother separate. The cow brightens up, and feels as it were a life *de nova*, though carrying her dead offspring —which she will continue to do till the fresh stimulus given by the blood that formerly gave life to the calf enables her system to contract the womb, and thereby expel the foreign body.

Causes. These should not have remained so long a mystery, when we consider how difficult and unreasonable it is for us to expect the cow to thrive and do well when placed in an anomalous condition—one totally foreign to her species—a "factory hand," as much so as the veriest operative in the mills of Lowell and Lawrence. The *true* causes, to be brief, are—1. Feeding upon slop or other milk secreting materials. 2. Insufficient feed of whatever description. 3. The attempted reproduction of the species, whilst at the same time a drain is being made upon the system by an excessive and unnatural demand for milk. 4. Irritation of the white membranes of the wind-pipe, changing and weakening the blood. 5. Exudative pleuro-pneumonia, or other debilitating disease. Any of the above named causes, singly or combined, when acting upon an animal placed at so great a disadvantage, as we have shown, will necessarily result in outraged nature chosing her great prerogative between life and death and the perfect propagation of her progeny.

Prevention. This can readily be done, as every intelligent reader will conclude after reviewing the causes. It consists in:

1. Feeding substantial feed, and enough of it, but not excessively sloppy or wet—for in this way, the bowels are kept too loose, relaxing the solids of the body, and thereby inducing over secretion of milk at the expense of good health.

2. Though the cow be unprofitable, allow some feed, gradually increasing it in quality, and, if necessary, in quantity, as she approaches the time of calving. By this means the extra demands of nature in the increasing size and wants of the calf will be supplied without at all affecting the health or strength of the mother—thus insuring a natural parturition.

3. Dry up the milk in all cows that do not, in the natural order of things, stop secreting milk, say three months preceding their time of calving, by giving sulphate of iron, three drachms, in powder, combined with gentian root; also, in powder, half an ounce, once daily, mixed in feed, for a week to ten days. No milking should be done, other than to prevent injury to the udder if it becomes distended.

4. If there is a cough peculiar to more than one or two cows, allow plenty of good food, with two drachms of the sulphate of iron, and half an ounce each of ginger and gentian, twice daily, to keep the blood in its normal state, to prevent relaxation of the solids of the body terminating in exudation, and to promote absorption.

When any of the cows have been sick of pleuro-pneumonia or other disease, cure them and keep up the strength by tonics and a generous diet, always bearing in mind that it is poor policy and worse economy to starve animals, especially when suffering from disease. Thus we have mapped out a plan, which, if faithfully followed and put in practice, will accomplish what it is intended to do; and if, in the opinions of others, I am in any way mistaken, I can only say as did Luther at the diet of Worms, "*hier stehe ich, ich kann nicht anders.*"

(2.) ABORTION, SPORADIC.—This variety is the result of accident and disease of the womb itself, and is not to be

confounded with abortion arising from causes named in the preceding article.

(3.) ABORTION BEFORE VIABILITY.—A variety of abortion occurring within a few weeks of pregnancy, caused by irritation and excitement of the uterus. To prevent a recurrence of the annoyance, change the pastures or feed of the cows before putting the bull among them.

Remarks. It will no doubt be remarked that the views herein expressed seem to differ with opinions already given, to some extent, to the public. They are nevertheless the same in substance that we have heretofore entertained, and they have given satisfaction to all who have faithfully put them to test. In my own hands, hundreds of cows in Pennsylvania, in the vicinity of Philadelphia, have not only been prevented from aborting their calves, but prevented from pleuro-pneumonia, also, when both were in the herd at the same time, and immediately preceding the use of iron, etc. So much does this accomplish, that Mr. Horace B. Taylor, a druggist in this city, sells it in quantity according to the receipt as heretofore published by me, and at the instance of Sylvester J. Megargee, Esq., a breeder of fine cattle, who has found it all that can be desired as a prophylactic in abortion.

In this connection, we would refer the reader to a lecture by the Hon. W. I. Skinner, of Little Falls, N. Y., in the course of which was shown the loss of nine calves by abortion, whereas in the use of iron, etc., the trouble was at once arrested. To those who at any time may have found no relief from its use, if there be any such, we can only say that the fact must be attributable to misapplication, adulteration, bad material, or, peradventure, some other cause. We would ask such persons "do they not find it as profitable to draw milk year in and year out

from the *machine* without interruption—which can be occasionally done by the cow aborting—as from cows carrying their calves to full time, and the consequent loss of three months' milk, (although an occasional cow remain dry as the result of abortion,) when butter, cheese and milk command so high a price?"

The efforts of others to solve the apparent mystery surrounding the cause of abortion have been considerable, and the results have been invariably somewhat contradictory, negative, non-committal, or of questionable utility. Thus the New York State Agricultural Society, through its then president, J. S. Gould, presented a memorial to the Legislature of the State, setting forth the evil results recurring to the dairy interests of the State, and asking for an appropriation to defray the expenses of a commission to investigate the cause, and point out a remedy; also, assuring the Legislature that if the prayer was granted, certain veterinary surgeons and medical men in *Philadelphia*, etc., were likely to throw light upon the cause, and recommend a cure. Thus, at the very beginning of his efforts, Mr. Gould perpetrates a blunder; for no veterinary surgeon or medical man from Philadelphia was employed on the commission. The choice of Mr. Gould was J. C. Dalton, M. D., of New York, whose report of investigations and their results disappointed many persons who had entertained high expectations from it; for it proved to be negative, and of little use to the dairy interest. The Society evidently was not satisfied with Dalton's report, for next year a new commission was formed, with W. H. Carmalt, of New York, at its head, but with no veterinary surgeon attached to it. His report was rendered in due time, and though non-committal in character, it contained valuable information to all interested in the dairy.

Amongst the contradictions of the two reports, we will only mention that Dr. Dalton says a cow having once aborted is *four* times more likely to do so subsequently, and Dr. Carmalt says that she is about *twice* as liable. Have they been guessing, or is this discrepancy merely the result of idiosyncrasy?

The experiments of X. A. Willard, Esq.,—a leader in all that pertains to excellency in dairy management—in feeding his cows "bone meal," are in the right direction, but do not go far enough, although apparently successful in preventing the recurrence of abortion. By substituting for bone meal that which contains more of the nutritious combined with the astringent in effect would be preferable; but as we have already intimated, it goes a certain way in meeting one or more of the causes of the trouble.

Abomasum.—The fourth or true stomach of the ox, and of the sheep also.

Angle Berries.—Warty-like excrescences, which differ from the ordinary wart by having a stem or neck to them.

Treatment. Cut them off with a knife or pair of scissors.

Anemia.—This term is applied to a weak condition of cows, sometimes called *want* of *blood*, and is more common than most persons are aware of. Cows are not selfish; the more they get in feed, the more they will generally give in the form of milk and butter.

Symptoms. Whiteness and clearness of the lining membranes of the nose, mouth, and eyes, are sure indications of a want of blood in the system. When this condition occurs as an effect of disease as, for instance, that of pleuro-pneumonia, the animal will become *hectic*, and die in a month or so from the first attack.

Treatment. Give the following powders, night and morn-

ing, in cut feed: Powdered gentian root, three drachms; powdered ginger root, three drachms; mix, and make one dose. If these powders improve the animal in a week or so, give two drachms of the sulphate of iron in addition thereto. The iron, however, may dry up the milk considerably. The case then resolves itself into whether it would be better to have a dead cow or a dry one. Good and generous feeding is indicated in this disease.

Apoplexy.—(See Splenic Apoplexy.)

Aphtha or Thrush.—This is an eruption in the mouth similar to small bladders, and is often mistaken for a contagious disease called Epizootic Aphtha.

Cause. Irritation in the mouth of young cattle from teething.

Treatment. If treatment be at all necessary, a weak mixture of vinegar and cold water will answer; or a solution of alum or alum water applied to the mouth twice a day, will be all that is wanted.

Biliary Calculi or Gallstones.—These are of several colors.

(1.) White Gallstones.

(2.) Yellow Brown Gallstones.

(3.) Dark Green Gallstones.—All of which are hard, grooved, and have the odor of musk. During the life of the animal no symptoms are observed whereby their presence can be detected. This, however, is of little or no consequence, as no treatment is necessary, and they scarcely ever cause the ox any inconvenience.

Black Quarter.—*Joint Felon—Quarter Evil.* This is a disease peculiar to young cattle, and occurs in the spring of the year. It is characterized by one hind leg and thigh

becoming congested, and black with coagulated blood. The other portions of the body retain their normal or healthy appearance. It is sudden in its attack, and death follows in a few hours.

Causes. A robust stamina or plethoric condition, and fulness of blood.

Treatment. No time for cure.

Prevention. This is the most important particular to be attended to. On the first appearance of this disease, give each young animal less than two years, and those above one year of age, a good brisk purge to clean out the bowels. For this purpose, use half a pound of epsom salts in two bottles of water, sweetened with molasses, and add a teaspoonful of ginger. Put the young stock on high land, and where the grass is not too good.

Black Tongue.—(See Glossanthrax.)

Black Water.—(See Red Water.)

Bladder Diseases.—The ox is not free from disease of this organ. Bladder diseases in cattle generally, are the result of irritant matters in the urine, and of calculi or stone in the bladder.

Symptoms. The animal is restless, having pain and irritation, and constantly endeavoring to make urine, but only a few drops passing at a time. The eyes are invariably blood-shot. Should the animal not be relieved, it will die from weakness, exhaustion, constant excitement and irritation.

Treatment. Give at once twenty-five drops of the tincture of aconite root, to relieve irritation and pain. Give freely linseed tea and other demulcents, to soothe the kidneys and bladder. In order that any earthy matter which may be present in the *uretus*, kidneys or bladder may be

lessened or destroyed altogether, give sixty drops of muriatic acid once or twice a day in cold water. This, however, should not be given whilst there is pain or irritation present.

Bladder, Prolapsus of the.—Among cows, during and after difficult calving, there will be sometimes observed a white, shining, watery bag protuding between the lips of the vulva. This is the bladder holding the urine. It is twisted at its neck, and, therefore, cannot be emptied. Many a good cow has been destroyed by ignorant persons mistaking this for some of the watery membranes surrounding the calf, and, therefore, *intentionally* tearing it asunder.

Treatment. Carefully examine the distended bag, its shape, and size. Having determined that it is the urinary bladder, carefully cleanse it, if dirty, and pass the hand previously oiled along its surface, ascertaining which way the turn or twist is made. Having satisfactorily known this, take the bladder by the other hand and reverse the turn or twist, and then carefully push the bladder back into its place.

Should the bladder again return, a *tampon*—a roll of soft cotton cloth—should be used to plug up the vulva for an hour or two. If this should not be sufficient, a stick or suture of stout saddler's silk, or other strong material, should be passed through each side of the vulva with a small packing or darning needle, and be allowed to remain for a few days.

Diseases of the urinary bladder are many, and diverse in their character. Having pointed out the most common forms of disease of this organ, I will simply mention by name others not so often seen, or at all events observed: Distention, causing abdominal pain; eversion; extroversion; inversion, causing painful urination; inflammation; paraly-

sis, causing difficult, and in some cases entire stoppage of the urinary flow and rupture of the bladder, and polypi in the bladder, causing frequent urination, and the urine small in quantity. Milch cows are chiefly the subjects of these last varieties of diseases of the bladder, which are the real causes of many mysterious deaths amongst them.

Blood Shot.—(See Quarter Evil.)

Blood Diseases.—(See Quarter Evil, Red Water, etc.)

Brain Diseases.—*Phrenitis.* An inflammation which is the same as mad staggers in the horse. It is due to overfeeding in long, wet grass or clover, and distention of the stomach. In rare instances it is caused by the deposit of a wax-like matter within the ear that communicates with the brain.

Symptoms. The animal is dull during congestion. This is succeeded by quickened breathing, excitement and delirium, the eyes being blood shot. It is the picture of disease and suffering, and if not soon relieved, falls and remains in a state of stupor, from which it never recovers.

Treatment. In the early stages of this disease, much can be done by an active cathartic or purge, composed of one pound of epsom salts, and one pound of table salt, dissolved in four quarts of cold water and sweetened with molasses. Apply ice or ice water to the forehead, warm water bandages to the legs, and tightly clothe the body. Inflammation of the brain is often seen in the fatal form of milk fever in cows.

Brittany Cow.—A very small animal, imported from the south of France, and from Brittany itself—which is to the northwest of France, and separates the English Channel

from the Atlantic Ocean. M. P. Bellamy, Veterinary Professor to the Department of Agriculture, at Rennes, says, *La Vache Bretonne—Utile au Riche, Providence du Pauvre*—"the Brittany cow—useful to the rich, and a blessing to the poor." Some few of these useful little cows, have been imported into this country, and, if all be true which is said in their favor, more of them ought to be imported. They are represented to be hardy and healthy; they can be kept on such food as other cows would starve upon, and they can stand a greater amount of hardship than any other variety.

Bronchitis.—This is inflammation of the wind-pipe, and even extending to the lungs themselves. There are every variety or severity seen in this disease, from the simple irritation of the buccal membrane to the intense inflammation terminating in the outpouring of serum from the blood into the cavity of the chest, resulting, if the cow be with calf, in abortion, and often, among others, in the death of the animal, after a long and lingering *hectic* fever. Bronchitis, and throat and chest diseases in cattle, are insidious and deceptive, for the ox does not, even under the most severe forms of these, exhibit fever and irritation, loss of appetite, etc., which are shown at once when attacking the horse. Not until the disease has made considerable progress, does the ox or the cow show symptoms of disease; so much is this the case, that I have on several occasions pointed out bronchial and chest disease, in milch cows, whilst the owners failed to see anything wrong. Indeed, this is the great difficulty in the successful treatment of diseases in neat cattle—not getting or applying the remedies at an early stage of the affection. A closer attention, and more careful observation on the part of farmers and others, is almost imperatively demanded, and

more especially should this be the case with dairy people; for when anything in the least unusual is discovered, such as a very slight grating sound in the wind-pipe when the ear is steadily applied, the cow should immediately have some iron, or tonic powders, and all will be well in a few days again; whereas, if left to itself, serum is exuded, and debility, weakness, and even death may follow. I would say to dairy men, *study the sounds* in the wind-pipe, both in the sick and well animal, and you will not only perfect your knowledge in this particular, but I assure you it will be no *idle* study; for in a short time you will not only be able to detect these insidious diseases, in the beginning, in your cows, but can apply the remedy also, thereby saving yourself from inconvenience and loss, which some can ill afford. In this way, you can prove to your neighbors, and to the world at large, that cattle diseases are not so difficult to cure after all, and that while others have so long sat and brooded with soured and sullen minds over their losses, and the ignorance and inefficiency of cow doctors, you have obtained a mastery of the situation.

Cause. Bronchitis is a disease which rarely attacks one animal only, but usually the most of the herd will have been attacked before it leaves the place, and then it will leave when there are no more victims to seize. These epizootic diseases depend upon what is called atmospheric causes. Such condition usually manifests itself in the spring of the year, and sometimes early in the summer. The peculiarity of the air causes irritation of the fauces of the mouth, throat or wind-pipe, and, as before stated, sometimes extends to the chest and lungs themselves.

Symptoms. In a week or so after the attack, a slight husky cough, with weeping from the eyes, and a watery discharge from the inner corner of the nose, will be seen;

and by applying the ear to the course of the wind-pipe, a slight, rough and grating sound will be heard. This sound, however, can be heard from twelve hours after the attack. According to the amount of serum poured out, and whether the cow be in calf, and how far she is gone in calf, so will the quickness and depth of the breathing be. Bronchitis is the forerunner of pleuro-pneumonia, commonly called the "Massachusetts Cattle Disease." The spotted and solid appearance of the lungs of animals having died of this disease, is due to the lungs being so long immersed in the serum or fluid, which is poured into the chest. Pathological anatomists are well aware, that if the substance of the lungs had been the original seat of the disease, the animal so affected would either have died, or have recovered in about forty-eight hours; whereas, none scarcely die within the first week from the attack, and many live a lingering life of six weeks and two months. This fact cannot be reconciled with the current theory of the lungs being diseased by direct attack. No! They are solidified either from their functions being impaired by being immersed in and surrounded by fluid poured out from the fibrous serous tissue, or from the effects of inflammation of the linings of the wind-pipe, and, perhaps, the linings of the chest, singly or conjointly with that of the wind-pipe also. This, I am satisfied, is susceptible of no other theory, or explanation whatever; and the sooner farmers and others think so, too, the better it will be for them.

Treatment. If the disease be discovered within forty-eight hours from the attack, take from four to five doses of the tincture of aconite root, twenty-five drops to a dose, and give one dose every four hours. If there be uncertainty as to whether the disease has existed longer or

shorter, to save time, the aconite may be given along with the following powders, three times in the day: Powdered sulphate of iron, three drachms; powdered gentian root, half an ounce; powdered ginger root, half an ounce; powdered sulphite of soda, half an ounce; mix, and make a drench, to be poured down the mouth out of a strong bottle. This medicine is to be continued (omitting the aconite after the fifth dose) till the animal is well, or looks brighter, and eats all it gets. If it be a milch cow, the usual quantity of milk will be given. In addition to the above medicines, give, once or twice daily, half an ounce of commercial sulphuric acid, largely diluted or mixed in half a bucket of cold water. In feeding, care should be taken not to give too much, so as to bring on dangerous indigestion. Cold water and pure air are indispensable agents in the treatment of this and all diseases of horses and cattle.

Bull Burnt.—This is a disease similar to gonorrhœa in man. Of all the domestic animals, the ox tribe are the only ones which are subject to this disease, more common in hot than in cold weather.

Symptoms. In urinating there is uneasiness, and the urine is passed in small quantities; slight mucous discharges from the organ of generation. In the bull, there is at times no desire for copulation, even when it is desirable that there should be. This often leads to the discovery of the cause.

Treatment. Separate the bull from the cows, and dose the affected ones, including the bull, with a purgative of epsom and common salts. Give one pound each, mixed or dissolved in four quarts of cold water, sweetened with molasses, and add a little ginger—say a quarter of an ounce. Be assured that both bull and cows are thoroughly

cured before the bull is admitted among the cows, for a second attack on the bull will render him useless.

Cachexia.—This, properly speaking, may be denominated a bad habit of the body, from faulty digestion, and assimilation of the food taken into the stomach.

Symptoms. Morbid or diseased appetite—the animal at every chance licking the earth, stones, lime walls, and other substances, which cows in health would not touch. This disease, like many others, occasionally takes an epizootic form, and attacks animals over a large tract of country. More particularly, the animal's coat stares, followed by a mucous discharge from the eyes and mouth; milk almost disappears, and what there is of it is very blue and thin. At this stage of the disease, the animal is thin; the membranes of the mouth, nose and eyes are white and pale, showing the bloodless state to which the beast is reduced. Stiffness of the joints soon presents itself, consequent upon infiltration of serum into the bursæ of the joint, causing much swelling. In certain parts of England it is called the "cripple." Finally, the animal is reduced to a skeleton, and dies within a few months to a year from the first appearance of the disease.

Treatment. The first thing to be done is to have the animal removed to high and dry pasture lands, which may be the means of cutting short the disease, before much injury has been done it. Give plenty of salt, and the preparation of soda and lime, with good food of a nutritious quality. A few doses of commercial sulphuric acid highly diluted—say half an ounce by weight, given once a day in half a bucket of cold water—and, if necessary, a few doses of iron and gentian, will arrest the disease.

Calving.—This is an operation of nature, which most

dairymen and farmers are familiar with, and upon which we will say comparatively little. Before we do this, however, a short description of the symptoms, by which it is known when a cow is in calf, will be given.

Symptoms. The first and most important symptoms of a cow being with calf, is the absence of œstromania or bulling. This, however, is not altogether relied upon in some cows, for there are cases in which a pregnant cow will receive the bull up to the time of calving. The next, and probably the more sure sign of a cow being with calf, is the increased size of the belly. The hand placed firmly against the flank or portion, where there are no ribs; a hard, firm body will be felt, which is the calf. As time passes along, the movements of the calf in the womb can occasionally be seen. Within a few weeks of calving, the external organs of generation—*labia pudendi*—increase in size, and discharge a thick mucus. The udder becomes swollen, hot, and full of the first milk—*colostrum*—which is sure indication that the time for calving is near at hand. This is accompanied by a relaxation of the ligaments of the pelvis, or, as the dairymen say, "she is down in her bones."

Symptoms of Immediate Delivery. Great restlessness and uneasiness, shown by lying down and rising up, and increasing in severity, until she has been delivered of a calf. From the time of conception, till natural parturition or calving, it is about forty weeks, or two hundred and eighty days.

There are, however, opinions at variance with these dates, founded upon the sex of the calf. If a male, it is carried longer than if of the opposite sex. These opinions form ground for debate, therefore we will drop theorizing.

NATURAL CALVING.—This resembles the fruit when

ripe, breaking from its attachment to the parent tree, and falling into the lap of mother earth. If the pelvic bones are well or proportionably formed in the cow, and the presentation and size of the calf be right, no trouble need be apprehended, and the cow may be left to herself. The natural presentation at full time, and of a full grown calf, is as follows: The *amnion*, or waterbag having been ruptured or broken, there will be seen the fore legs and head of the calf resting upon the two feet, and protruding a little. If, however, the cow should labor long with the calf in this position, and she is weak and thin in flesh, she may be assisted. This can be done by taking hold of the two feet and part of the head, and when the cow makes an effort to strain, pull at the calf. If sufficient force cannot be applied by the hands, then place a soft but stout rope round the feet of the calf, and apply traction or force. Before any force whatever is used, be sure that the mouth of the womb is sufficiently dilated; for if this be not the case, then by using force the womb is torn or ruptured, and the death of the cow is the result. Be patient, and time—the prover of all things—will also prove the wisdom of waiting. If after delay, however, both cow and calf should be lost, be consoled by the fact, that it is likely the one or both would have been lost any way; for there will be found some one or other of these malformations, either in the pelvis or arch of the pubis of the cow, or an undue proportion of the size of the calf to the pelvic arch through which it is has to pass, to be delivered. In all cases where the calf presents itself in the form above described, and delivery is not effected, rest assured that the pelvic arch of the mother is too small or too narrow. If that be not the case, the calf is over size, from water in the head, (*Hydrocephalus*,) or water in the belly, (*Dropsy*,) or both

of these conditions combined, which is seen by veterinary surgeons, in large country practice.

Before a calf of this description can be delivered, and the cow relieved, the head of the calf must be pierced, to lessen its size, then a long spear-like instrument—trocar—is used to pierce the belly or abdomen of the calf, to empty the fluid, to lessen also its great size. When that is properly done, and the cow is not too greatly exhausted, she may complete the delivery without further assistance.

Twin Calves.—Twin presentations are as various as they are curious. Thus, we sometimes see a fore leg of one calf, and the hind leg of the other. In this condition of things, it must be evident that no force should be used to bring them away till each calf is properly adjusted in its position. The best and quickest way is to adjust the calf which first presents itself, and if portions of the other be presented also, push them back into the womb. When one calf is safely delivered, not much difficulty will be experienced with the other.

Unnatural Presentation.—We have now arrived at that portion of our subject which, more plainly talking, has reference to when the calf is being forced into the neck of the uterus or womb in any form except the natural position already described. The unnatural position of calves, about to be delivered, is happily rare, and forms the exception to the natural law of presentation. However rare these presentations are, they nevertheless are sometimes seen. Thus the feet are presented, and the head of the calf doubled on its neck, and in the womb. This condition is best remedied by tying a rope round the fore feet, or both together, and raising the hind parts of the cow off the ground; thus forcing the calf down to the fundus or bottom of the womb. This being done, reach

the hand in and seize the calf by the head, and bring it with you, while an assistant is pulling upon the rope attached to the fore legs.

By adopting this plan a safe and speedy delivery will be effected. English veterinary surgeons, with Professor Simmonds at their head, say this is the most dangerous form of presentation, involving the life of both cow and calf. Why do they say so, and how does it prove so to them? Because they vainly endeavor by force to bring the head of the calf into the neck of the womb, when there is no room to do so, without first elevating the hind portion of the cow sufficiently for the calf to fall to the bottom of the womb, where there is plenty of room to turn, not only the head, but the whole of the body also.

Another form of malformation is, where we have the head and neck within the neck of the uterus or womb, without the fore feet and legs. The only alternative in this case is to remove the head by cutting it off from the neck; leaving, however, sufficient skin for attaching a rope to it. But if the head has not fairly passed out, an attempt should be made to put it back into the womb again, and not bring it out. Before pushing it back, fix a rope round the lower jaw. The legs one by one should be searched for by the hand, and when found secured by another rope. After both fore legs and head are thus fairly within the grasp, use traction or gentle force, and take advantage of every strain made by the cow, and by these means the calf will be safely delivered.

The next unnatural form consists in the presentation of one or other of the fore legs, where the nose is pressed downwards, and the crown of the head only is seen or felt. Secure the leg which is seen by a cord, push on the crown of the head or elevate the hind parts of the cow a little, to

force the calf slightly down in the womb; then pass a cord round the lower jaw, and find the other fore leg, securing it by a rope. The rope attached to the jaw should be first pulled to straighten the head on the neck, then the cord attached to the legs should be pulled simultaneously, and the head and feet as they are presented should be guided by the hands of an assistant until the head and both fore legs have fairly entered the proper channel.

The next presentation is what is called a *breech* presentation—the tail and buttocks are here presented for delivery, which, of course, cannot be effected in such position. The only chance of a safe delivery is to get hold of the hind legs, which is not easily effected; but perseverance, assisted by ingenuity, can do much, when it is well known what is required. In this case, get hold of both hind legs, and when they have been secured, and brought into the proper channel, delivery can be easily effected.

The next and last presentation which we notice, is where the crown of the head is presented, and the calf is lying upon its back. This is a tedious labor, and to effect a delivery at all, the calf must be turned, which, by the by, is not an easy task; still, however, it can be done by securing the head and fore legs with a rope. Should all efforts fail, do not exhaust the strength of the cow, but hasten to detach the legs of the calf, opening its belly, and in some cases, the head also, to lessen its size, thereby securing the delivery of a mutilated calf, but a living cow. The subject is far from being at this point exhausted, but we have gone sufficiently far for our pages. We will now proceed to another subject connected with calving, and that is the retention of the after-birth, or *retentio secundinarium*, as it is called, or, as the dairy folks say, the cleansing of the cow.

Retention of the Placenta, or After-birth.—If the cow has gone her full time with calf, and is in a healthy condition, the after-birth will not be retained long after she has given birth to her calf. When a cow does not cleanse properly, and within a reasonable time, there is then something otherwise wrong with her health, such as debility and want of vitality in the system. It is this that must be looked to, and not the want of timely cleansing that demands attention, as being the cause of the cow not doing well after calving. Remedy these existing causes, and the cow will cleanse properly enough. Contrary to the generally received opinion of farmers and others, the retention of the after-birth for a day or two will do no harm, provided that decomposition does not take place with the after-birth; for in such cases, the whole system of the cow is apt to be contaminated and poisoned.

Treatment. Cows not having cleansed properly within twenty-four hours after calving, should be given the following mixture: Epsom salts, one pound; powdered ginger, one ounce; powdered fœnugreek, one ounce; caraway seeds, half an ounce; mix, and give in three or four bottles of warm ale, porter or warm water, sweetened with molasses. This mixture not having the desired effect in twelve hours, the hand, well greased, should be introduced, and the after-birth at the attachments, called cotyledons, gently pressed. This must not be accompanied with much pulling, as pressure with the finger and thumb will be all that is wanted. This operation may be followed by giving the cow a little warm ale or molasses water, with half an ounce of powdered ergot of rye; and in half an hour, an additional half ounce. This will cause contraction of the womb, and expulsion of the placenta. When decomposition or

putrefaction of the after-birth has taken place, which is known by the black color, the womb should be well washed out with a weak solution of chloride of lime. Administer, also, by the mouth, one ounce, three times in the day, of sulphite of soda for a week, to neutralize any of the poison of putrefaction, that may have been absorbed into the blood. Give the cow good and nutritious feed to support her strength.

Symptoms of Blood Poisoning. The absorption of putrid matter into the blood is immediately followed by fever, of a low type, called typhoid, and if not speedily checked will be succeeded by typhus, from which the animal cannot recover.

Treatment. Give the sulphite of soda in the manner spoken of above, combined with two drachms of the sulphate of iron, and one ounce each of powdered ginger and fœnugreek three times in the day, till the beast is bright, lively, and free from stupidity.

Inversion of the bladder will be found treated of under Bladder Diseases.

Disease.—Inversion of, or falling down of the calf bed, will be treated of under its proper or alphabetical head, Falling of the Womb.

Catarrh.—This is not a disease common to the ox, for when causes arise sufficient to produce catarrh or cold in the cow, it does not run its course as such, but is speedily accompanied, or at least followed, by severe complications. Cattle not exceeding two years old are subject to a disease somewhat similar to cold, called hoose. (See Bronchitis and Hoose.)

Catarrhus Linuum Frontalium.—*Malignant Catarrh.* This is one of the *recorded* diseases of the ox which

I think has really no existence, except in the brain of some men; or it may be a condition confounded with *Typhus Contagiosus Boum.* The disease is described as being similar to glanders in the horse. If this be the case, the disease is not properly named; for the frontal sinuses are not the seat of the disease. This multiplication of names of diseases is only calculated to puzzle people, and annoy the farmer. Further than this, I have so little patience with the writers who thus manifest their ignorance of the first principles of pathology—to which all writings and opinions should be subservient—that I feel it my duty to denounce them unsparingly whenever opportunity offers.

Cattle Plague.—This is a vague name, and conveys no intimation of the cause, nature, seat, or characteristics of the affection, whatever it may be. Therefore, for the credit of the writer and the convenience of the public, no disease should be called a plague. There is now no disease affecting the human family called a plague. The experienced physician can tell the nature, seat and complete history of the disease, and gives it a name by which it will be known and recognized. Why should not the veterinary surgeon do likewise?

So long as such men as Gamgee continue to write and speak of cattle plagues, so long will veterinary surgeons continue to labor in vain for the public confidence. Why should not things, states and conditions be called by their right names? Cattle disease, cattle plague and rinderpest should long ago have been blotted from the books; for, at best, they only serve as a cloak or cover to hide the innate ignorance and stupidity of some veterinary surgeons—horse and cow doctors particularly. The word plague means a *stroke,* and that is all the insight a person can

derive from the word. As every disease may be considered a stroke, why not add what kind of stroke it is, whether it be a stroke of palsy, or of the sun? (For Cattle Plague see Typhus Contagiosus Boum and Pleuro-pneumonia.)

Chicken-pox.—*Varicella Boum.*—A pustular eruption on the teats of cows, presumed to be caused by eating vine leaves. The eruptions soon discharge, dry up, and heal, without any treatment whatever having been applied to them.

Choking.—This is of frequent occurrence among cattle or cows fed upon potatoes, turnips, etc.

Treatment. When the potato is lodged in the upper or middle third of the gullet, the mouth of the animal is to be held open by means of a balling iron, or some other contrivance, while a person having a small hand should pass a cord like a clothes line, with a loop on the end of it, and try to get the noose over and beyond the obstruction. If the substance be low down in the gullet, manipulations may be tried from outside, by tightening the skin upon the obstruction, and trying to move it up, if possible; but downwards, if it will go without too great force being used. Failing to remove it either up or down, try to dislodge it by pouring small quantities of oil or melted lard, not hot, down the throat. If this also prove ineffectual, the probang should be used; or in its stead, a strong flexible cane or rattan, may be tried; but care should be taken to have the cane go down the right passage. If coughing is set up on the introduction of the cane, have it withdrawn as it has entered the air passages, but try till it has been properly entered down to the obstruction. With patience and perseverance the difficulty will usually

be overcome. Still, however, there are cases which require the gullet to be opened over the place of obstruction; a safe operation requiring only a simple cut through the skin and outer surface of the gullet, which will readily heal without much trouble, by bringing the lips of the wound together, with a stitch or two of strong, but small twine or saddler's silk, by means of a small packing needle. Feed the cow or ox, for a week or more, upon soft or prepared food till the wound has healed. When cows or oxen remain long in a choked condition, the throat is apt to swell from the accumulation of gas in the first stomach, which will have to be treated as for hoven or tympanitis—occurring usually from eating clover or rank and wet grass. (See Hoven.)

Colic.—Colic in cattle is more rarely seen than in the horse, but occurs in the form of hoven, (which see.)

Consumption.—This disease is not so common in domestic animals as in the human family, nor is it as frequent in any of the animals as it is in the milch cow. Consumption in cows is usually exhibited in the tubercular form. These tubercles are from the size of a pin head to that of a hickory nut, flattened, oval and round, and are not confined to the lungs, but are seen underneath the pleura costalis lining the ribs—over the diaphragm, peritoneum, and the omentum or caul.

Causes. This is considered one of the hereditary diseases of cattle, or rather milch cows. As is elsewhere stated in regard to hereditary disease—in the first part of this book—it does not necessarily follow that a cow should be consumptive, because its mother was so. No. But rather because it has inherited the great milking qualities of its ancestors, whereby the animal is reduced in flesh, condition and vitality, the fibrous, serous tissue of the body becoming

deteriorated—hence the foundation for tubercular consumption. Cows of some breeds are not selfish, for the more they are fed, the more milk will they give. These are all the claims which can justly be made in favor of the hereditary cause of consumption in cows.

Symptoms. Thin of flesh, unthrifty; a staring coat or hair, long and dead-looking; a low husky cough, loss of appetite, weakness, and a bloodless condition of the whole system, which is readily known by the pale, white look of the lining of the eyes, nose, and mouth. The consumptive cow stands with her back arched, and her fore legs turned out at the elbows, and when lying rests on the belly and breast bone. The milk of such cows is thin, blue, and watery.

Previous to the death of a consumptive cow, diarrhœa, dysentery, discharges from the nose and eyes, accompanied with *hectic*, or sympathetic fever, conclude the symptoms of this lingering, but fatal disease.

Treatment. In the early stage of consumption in cows much can be done in the way of treatment. Feed the animal well with rich and nutritious material, such as linseed, cake meal, etc. Sulphuric acid given several times a week, in doses of half an ounce in weight, largely diluted with water, will sustain the vital powers, and impart tenacity to the buccal membrane throughout the body. Use occasional doses of sulphate of iron and gentian; three drachms of iron and half an ounce of the gentian, will make one dose. Such treatment will prolong the life, and, at the same time, improve the condition and milking qualities of the cow.

Contagious Typhus.—(See Typhus Contagiousus Boum.)

Coryza.—(See Catarrhus, Linuum and Hoose.)

Cow-pox.—*Variolæ Vaccinæ.* This is a simple affection of the skin of the udder, which has claimed much notice on account of the valuable benefit conferred by it upon the human family, in furnishing the material for the *vaccination* of children.

Cause. At present unknown.

Nature. A contagious eruption, running a fixed course, and accompanied by slight fever.

Symptoms. Teats painful, slightly swollen, a faint blush upon the udder; and in about three to four days, red hard spots are seen, succeeded by red patches, which, in from a few days to a week, form bladders containing the true vaccine lymph.

Treatment. Warmth, good nursing, and the drawing of the milk from the udder by the SYPHON—as shown in the treatment of diseases of the teats. (See Teats.)

Croup.—Stridulous croup in animals is rare, but it is seen occasionally in milch cows, and is very fatal, from the fact that it is situated in the larynx, which speedily causes suffocation, unless the windpipe be opened with a knife to admit of the act of respiration and expiration till the swelling of the head of the windpipe has passed off.

Cause. Cold attacking the head of the windpipe, followed by inflammation, and the development of false membranes.

Symptoms. Loud, stridulous noise or murmur, quickened breathing, excitation, fever, and threatening suffocation of the animal, cough and distress.

Treatment. Place the animal in the open air—if in summer time, in the shade—and give aconite, in the form of tincture, twenty-five drops to a dose. This will allay

the excitement, fever and irritation. If this give relief, repeat the dose in a few hours again. But on the contrary, there being no relief in half an hour, give no more aconite, nor indeed anything else. There will be but one of three things to be done: either to kill the beast, if it be in good condition, and fit for market; or wait for the animal to die, or have the boldness to cut out a hole in the windpipe, about the middle, and on front of the neck. In case the latter is preferred, tighten the skin on the front of the windpipe, and make a clean cut fair down the centre, and through the skin; when the white shining windpipe is brought to view, have an assistant to hold the edges of the skin back out of the way, till a hole is cut out of the cartilages of the tube, as large as a fifty cent piece. This will give instantaneous relief. The hole will gradually fill up, and close again without any trouble whatever. This, I am satisfied, is the only sure way of cure in this disease.

Cud, Loss of the.—This occurrence is the symptom of, and not a disease. Loss of the cud, or rumination, accompanies almost every disease of any importance attacking the ox or cow. When rumination has ceased for a time, and is resumed again, it is a good symptom that the animal is somewhat better, and an indication that the functions of the body are about being resumed again, and are demanding food for their nourishment. Loss of cud is among the first symptoms observed by farmers in case of bronchitis, pleuro-pneumonia, hoven, aphtha, etc.

Diarrhœa, Simple.—This variety does not call for much description, as it is only an effort of nature to get rid of something that is injurious. By its removal the purging will stop. Simple diarrhœa rarely calls for treatment, but

if it should, change of feed and pasture land will be the first things to be attended to; and, if necessary, after a trial of new feed and pasture, a few powders composed of prepared chalk, two ounces; ginger, half an ounce; opium, one drachm; may be mixed and given in the form of a drench, with wheat flour gruel. Repeat the dose, if it be necessary, but never be in a hurry to give astringents in looseness of the bowels, as much mischief may be done by controverting the efforts of nature, which are always of salutary effect, if not too violent for the condition of the beast, and in that case interference is necessary.

(1.) DIARRHŒA, CHRONIC.—This condition is sometimes called the *Rot*, from the belief that the animal is rotten. Chronic, or indeed, any kind of diarrhœa should not be looked upon as a disease at all, but merely a symptom of internal irritation of some kind.

Causes. This is an important inquiry in cattle pathology, for farmers are sometimes disappointed when they are told the animal will die within a given time, not knowing the nature of the disease of which diarrhœa and dysentery are but the symptoms. Chronic diarrhœa is the sequel to tuberculous consumption already described under that head; or dysentery may show itself before even consumption is either thought of or recognized. However, chronic diarrhœa or dysentery is the result of tubercles situated on, and in the white membranes throughout the body.

Treatment. Generous diet, composed of linseed or cake meal. Commercial sulphuric acid, gentian, and sulphate of iron, are the medicines employed. In addition to this treatment, which has already been recommended for consumption, I would advise weekly inhalations of sulphurous acid gas in the manner recommended under that head in the list of medicines, (which see,) for I think this is one of

those diseases which will be greatly benefited by its proper use.

(2.) DIARRHŒA IN CALVES.—This is a frequent affection among young calves, and destroys thousands of them every year.

Cause. Depending upon the character of the milk; not so much its quality as the time and manner of giving it. Thus, calves are not allowed to suck their own mothers; frequently they are not allowed to suck at all, but have to drink the milk out of a bucket, and then it is often cold before they are allowed to have it. The rapidity with which they drink their allowance, which is often too much for them, gorges the stomach and paralyzes the digestive functions. Hence, the *white* diarrhœa so often seen among young calves.

Symptoms. The symptoms one would think alike in all animals; but this is not the case here, or so far as the diarrhœa of calves is concerned. They have a voracious appetite, swelling of the belly with occasional pain, discharges of wind or gas, and white or yellowish-colored excrement or dung, while in some bad cases the true milk is passed unchanged by the action of either stomach or bowels.

Prevention. This is better than cure, and consists in allowing the calf, until several weeks old, to suck its own mother, not only morning and night, but at least three times in the day, dividing the periods as evenly as possible. Thus, by allowing calves to suck the milk for themselves, paralyzation and gorging the stomach with cold milk is avoided, and thereby white diarrhœa prevented.

Treatment. Give three drachms of carbonate of soda in well boiled wheat flour gruel once a day. If this is not convenient, give a tablespoonful of common rennet after each feed of milk the calf takes; this will materially aid

proper digestion by its power in decomposing the milk and fitting it for assimilation.

Distention of the Rumen.—(See Hoven.)

Dropping After Calving.—(See Milk Fever.)

Dysentery.—(See Consumption and Chronic Diarrhœa.)

Ectopia Cordis.—This is a deformity sometimes met with in calves at birth. The heart may be seen outside of the chest, or the lower portion of the neck, or even through an opening below the chest, and sometimes even in the abdomen. The animal will have to be killed.

Epizootic Aphtha.—*Murrain.* In some parts of the world, this disease is called murrain. It is one of the epizootic diseases of cattle, attacking the feet and mouth, and sometimes extending to the teats of the udder.

Causes. Contagion is believed to be the cause, but I never can be reconciled to belief in the repeated bug-bear that contagion is the only cause of certain diseases. We all know, however, that when a disease is once established it can affect others; but still we must consider that all diseases, of whatever kind, must have had an *origin* aside from any contagious element to produce it. This, I firmly believe to be one of those diseases, depending not so much upon contagion, as upon what Sydenham would call the peculiar constitution of the year, exercising certain deleterious influences on the system, and soon followed by disease of some portion or other of the body.

Symptoms. Sore mouth, sore teats and sore feet; elevated vesicles within the mouth, and on the teats, which contain pus, and soon discharge and dry up through the formation of a scab—at which juncture fever and other constitutional

symptoms subside. When the feet are badly affected the sores burrow deep in between the hoof and the sensitive structure of the foot, which results in a complete separation of the hoof, and its being finally thrown off entirely.

It is painful to look, as I have done on several occasions, upon a whole row of cows suffering from suppuration, and falling off of the hoofs. The loss to dairy men, consists in the loss of milk, and loss of condition in the cows; for if the cows are properly attended to, not many of them need die. The hoof will grow again, and be as useful as ever, from the fact that cows like pigs are not kept for racing purposes, and a second hoof, although not so strong as the first one, will answer for the purpose of walking on soft ground, and gathering their food.

Treatment. Apply to the sores the following lotion: Sulphate of zinc, two drachms; water, one pint.

Prevention. When once fairly established in a place, it is almost a certainty that all cows and neat cattle will take it, some developing it sooner than others. To save time and expense, "take the bull by the horns," and inoculate every one of them. By producing the disease in this way, a week or so will see the last of it, and by good care not much time or loss will have been incurred. The milk of cows affected with this disease is poison. Calves, by drinking the milk of cows with this disease, will perish in great numbers.

Symptoms. Difficulty in swallowing, and cough; saliva driveling from the mouth. The whole accompanied by fever, and frequently ending in death.

Eye Diseases.—Cows are not so often the subject of diseases of the eye, as horses are. There is, however, one disease of the eye which cows are often affected with,

namely: cancer of the eye, which cannot be cured, but will ultimately destroy the eye altogether. For other diseases of the eye, see *Eye Diseases* in the first part of this book.

Falling Sickness.—(See Milk Fever.)

Falling of the Womb.—*Calf Bed—Reed, etc.* This deviation from the normal or healthy condition is a great trouble to the farmer and breeder.

Cause. Relaxation of the horns or ligaments of the womb from a weak and relaxed habit of the body, accompanied by debility.

Prevention. Immediately after calving, apply a truss or pad to the mouth of the vagina, and secure it in the following manner: put a large horse collar on the cow's neck; one surcingle round the body of the cow, behind the fore legs, and another in front of the udder and hind legs. This being done, attach a small soft rope to each side of the collar, bring it along each side of the back bone, give it a hitch round the fore surcingle, and the same on the hind one; then bring the rope close together under the tail, and place the pad over the proper part, with the ropes laid firmly over it. Here tie both ropes together with a string, just below the pad, then bring one rope down between the udder and thigh, give it a hitch round the hind surcingle or band, and finally secure the end of the ropes to that portion coming along the back.

Treatment. When the womb has fallen down and is inverted, assistance should be had at once. The womb or bag should be lifted into a clean cloth, and held up by a person on each side. There are two ways of returning the womb into its place, the one by pressure on the neck or small portion of the womb, and the other by pressure to

the fundus or large end, or bottom of the womb. This last is the best way, because we have not only the mere pulling of the womb to contend with, but its invertion also. So, therefore, apply gentle pressure to the bottom of the womb, first having cleaned it from dirt, dung and straw. The operation will be effected more easily by having the cow placed with her fore legs low, and the hind ones high, so that it will slip in without much difficulty. After it is in, the cow should be kept standing in such position, or even lying in this position, a day or so, and the pad, already spoken of, should be applied as soon as the operation is finished. The pad is a much better way of securing the parts than by sewing the lips of the vagina.

Where all efforts fail to put back the bed, and when decomposition or mortification has ensued, the only chance to save the life of the cow is to cut the womb or bed at its smallest or neck portions; but before doing so, tie firmly round the neck of the womb a well waxed cord, which will prevent bleeding. This is to remain on the bed which is left. Give immediately, twenty-five drops of the tincture of aconite root every three hours, till four or five doses are given, which will relieve pain, and control the circulation.

Fardel Bound.—This is a disease affecting the *omasum*, or third stomach of the cow or ox. (See Impaction, Hoven, and Texan Fever.)

Feeding of Milch Cows.—I am induced to refer to this subject on account of its importance, together with the eminently practical manner of feeding cows, suggested in a pamphlet by Mrs. Agnes Scott, a lady of Scotland. Premising, however, that the *bean* and *pea* meal spoken of, may, with advantage, in this country (at least in the present condition of our agriculture and variety of crops

produced) give good place to our Indian or corn meal. The turnips may be supplanted by beet or mangold, etc. Turnips as a crop, farmers do not as a class with us, appreciate the true value of, either as a feed for cows or as an improver of manure—lying at the base of true agriculture:

Experience soon taught me that most milk and butter were produced when the feeding was most carefully attended to. In order to ensure this, I superintended this department myself, and shall give the management as systematically followed. In *winter*, at six o'clock in the morning two arms *windling*—an armful tightly wound up between them. Afterwards they were well cleaned, the stalls being also well littered, and the doors of the cow-houses shut until *eight* o'clock, when all were called to the milking. At *ten* o'clock, an ordinary sized barrowful of turnips was given between three cows, and when the turnips were not to be had, a quart of peas or bean meal was given instead, mixed with a pint of cold water. There is no feeding, however, equal to turnips, especially the Yellow Aberdeen. A richer taste and color is imparted to the butter produced by this root than from any other kind of feeding in the early part of winter—while a larger quantity both of butter and milk is produced thereby. In the spring, when the feeding properties of this root are very much deteriorated, a small quantity of peas or bean meal will be found needful to keep up the full return of milk. The peas or bean meal are preferable to oil-cake or locust-beans, as both of the latter give the milk and butter a hard flavor.

About *one* o'clock, the cows should be let out to watering, and when weather is mild and otherwise favorable, fresh air will be found to be of very great advantage to the general health of the dairy stock. When the cows are at

large, the cow-houses should be thoroughly cleaned in every nook and corner, the doors being left open to admit fresh air, weather being seasonable. While kept in the house, let them have a drink of meal and water *twice* a day; a handful of oatmeal and three pints of lukewarm water will be sufficient. In the first draught, let a handful of salt be given.

When the cow-houses are well aired, a *windling* of straw should be given between two cows as they return from watering. Upon the supposition that the cow-houses are well ventilated from the roof, the doors should be shut. About *four* or *five* o'clock, turnip should be given in quantity as before; or, failing turnip, the above named substitute. The *time* of *feeding* should be regulated according to the season; *milking-time* also should be so fixed that it may be *regularly* kept—and kept so as to be suitable not only for the parties engaging in it, but so as not *unduly* to disturb either the rest or feeding of the cows.

At *eight* o'clock a *windling* of good meadow hay between two cows should be given for supper, the quantity being always regulated according to what each cow can consume. It is a great mistake to keep fodder in quantities lying unused; rather let the appetite be tested, and by keeping it always sharp, not only will each meal be eaten up with relish, but a more healthful state will be maintained. In addition to this hay, cows that have recently calved should get half a pailful of boiled turnip, mixed with a quart of peas or bean meal rather more than lukewarm. For four or five days after calving, cows should have no turnips.

Fever.—Cows are subject to *ephemeral* fever, or more plainly speaking, a fever of a day's duration, which passes off without any trouble. This fever has been thought, by

some persons, to depend upon hollow horn and wolf in the tail, and they have consequently cut the tail, and bored the horns of the poor dumb brute.

Foul Claw.—*Foul in the Foot.* This is a sore between the digital spaces, and is caused by the animal standing in mud and moisture, which scalds the parts, and produces lameness.

Treatment. Cleanse out with a hair rope or by some other means, and apply sulphate of zinc, one drachm; water, half a pint. Keep the feet dry and clean, which will not only assist the cure, but is a preventive also.

Gangrene of the Tail.—*Gangrena Caudæ Epizootica.* This is not, as yet, at all events, an American disease, but is of frequent occurrence among the cows of continental Europe. This fact, however, I believe to be the only true reason why we in Pennsylvania will persist that cows have wolf in the tail, accompanied with an empty horn.

Cause. Unknown.

Symptoms. We are told by Hering and Rychner that the tail becomes paralyzed, its skin soft, swollen, and filled with water at its end, and when opened, a bad smelling ichor is discharged. The disease spreads upwards, where finally separation of the tail takes place, leaving the animal without one.

Garget Mammitis.—Inflammation of the udder in cows is often of a very troublesome character. It occurs shortly after calving, and in some instances not for a week or two after. The inflammation is usually confined to one quarter of the udder only, and may be of an acute, or chronic character.

Cause. Want of proper attention in not milking the cow sufficiently after calving, and in many cases by not

milking the cow when her udder is almost ready to burst, even before calving. In a word, if the udder, teats and milk ducts are kept from over-gorgement, there can be no udder disease. The trouble is, that all cows are not alike in the production of milk, but unfortunately they receive the same treatment; and hence those cows which are endowed with great milking qualities are usually the victims of garget.

Symptoms. Heat, redness and pain, followed in a day or so by elevated swellings, which, if acute, will grow to a point, becoming soft and fluctuating, and containing pus; and if not opened at this stage, fistulous sores will be formed, which may cause the final destruction of one portion of the udder.

When the heat and redness is not followed by swelling containing pus, it is called chronic garget. In addition to these symptoms, the cow will have shivers and chills, not from cold, but from the muscular rigor which is set up in cases of extensive suppuration.

Treatment. In the acute form, apply warm poultices to hasten suppuration or beeling. Where the parts point, and contain fluid or pus, open deeply at the lowest point, that the pus may escape without forcing. When properly discharged, heal as for a common sore. (See Ointments in the part of this book treating upon Horse and Cattle Medicines.) For chronic garget, use a cold application, so as to put it back, if possible; if not, hasten the suppurative process, and treat as for the acute form. Whatever treatment may be adopted, by all means do not forget to milk the udder *severely*, and the best plan will be to put two strong calves to suck, for by so doing the pus may be drawn off by them.

Gastro-Enteritis in Calves.—(See Diarrhœa in Calves.)

Glossitis—Anthrax—Blain.—This is a disease affecting the tongue, and can only be taken for epizootic aphtha already described. Although apparently situated in the tongue, it is a constitutional disease—a blood poison in fact. This is also an epizootic disease, and as usual, it is thought to be contagious, which is equivalent to saying, we know nothing of its cause or mode of warfare. Few veterinary surgeons, or horse doctors, have, it would seem, ever known of zumins, ferments or leavens, as the Scriptures have it, for not in any work on veterinary science or animal husbandry are any of these words mentioned; nor is a hint thrown out that such agents do exist, and have a deleterious effect upon the health of animals. I am satisfied that upon further inquiry and investigation, ferments will be found the only cause of such diseases as are at present involved in darkness and obscurity.

Symptoms. Loss of appetite, saliva flowing from the mouth; the tongue red, swollen, and inflamed, thus arresting mastication, or chewing; the muzzle or lips, head and neck swell; breathing disturbed. Appearances of suffocation set in, the saliva is offensive to smell, and tinged with blood; the basis of the discharge is of a greenish color, not unlike *vomicæ* seen in the lungs of glandered horses and consumptive men. In this condition, the animal will live from two to four days.

Treatment. Lance the turgid tongue to relieve congestion, wash the mouth with vinegar, and administer a slight purgative. Give one pound of epsom salts in two bottles of water, sweetened with molasses; a little powdered ginger may be added. Allow the animal plenty of cold water to

drink, to cool the mouth and tongue, and furnish pure air. Follow with two drachms of the sulphate of iron, and an ounce each of ginger, fenugreek and sulphite of soda twice in the day, which will give strength to the body, and purity to the blood.

Hæmaturia—Blood in the Urine.—This occurrence is not to be confounded with red water. Coagulated, or congealed blood comes when the first flow of water is discharged, and the remainder of the urine is clear.

Cause. Blows or other injuries over the region of the kidneys, or from eating the leaves or tops of plants having a powerful diuretic effect, such as some of the yews, cedars and savins. Cows in calf, and mares with foal, will eat what other animals, or what they themselves would not eat when in other condition. (See Red Water.)

Treatment. Give linseed tea to drink, and slush mashes and plenty of fluids to drink. No medicine will be required.

Hair Balls.—These are very common in cattle, and are introduced by the animal licking itself, and swallowing the hair. These balls are found after death, and are of various sizes, and thoroughly felted.

Herpes.—(See Mange.)

Hide Bound.—This is not to be taken as a disease, but merely the result of faulty digestion and assimilation.

Treatment. Give one pound of epsom salts, half an ounce of ginger, and mix in two bottles of cold water, sweetened with molasses. Next day follow with the following powders: Powdered ginger, one ounce; fenugreek, one ounce; caraway seeds, half an ounce; mix, and give in one dose; and one dose may be given daily for a week.

Hoose in Calves.—This is a common disease in breeding districts, and is very fatal in its results, attacking young calves and cattle, till two years old. It is a parasitic disease.

Cause. The presence of minute worms in the bronchial tubes. These worms are called *filaria bronchi*, and inhabit the windpipe of young cattle, sheep and lambs.

Prevention. Keep calves, sheep and lambs on dry land, where there is no marsh, wet land or meadow.

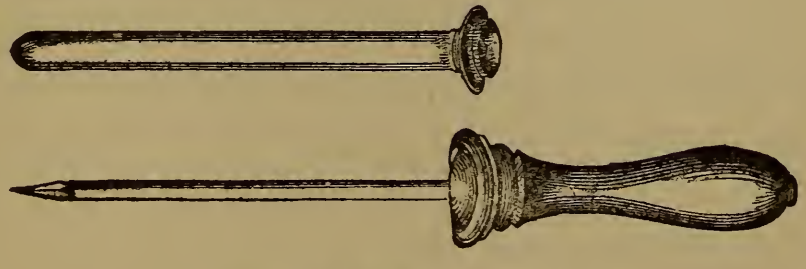
Symptoms. Constant, husky cough; difficulty in breathing; emaciation, and loss of appetite. Thus the disease goes on from bad to worse, until death takes place in from two to three weeks, depending much, however, upon the age of the beast.

Treatment. Linseed oil, two ounces; oil or spirits of turpentine, half an ounce, well mixed with the linseed oil. This dose is for a calf of six months old. It should be repeated every two days. Give the calves good feed, such as oil cake, etc. Another form, and a good one, which is generally used in sheep to save expense and trouble, is to get them together, and drive them into a pretty close house or shed, not larger than will hold all the affected ones. Then procure an earthern bowl or basin, containing one ounce each of common salt and oxide of manganese, and pour over this a mixture, say, water, half an ounce; sulphuric acid, one ounce and a half; stir with a stick, and chlorine gas will be evolved. When sufficiently stirred, leave the place, and close the door. Repeat the inhalations for two or three times, and let two days pass before each subsequent inhalation. If the animal be much weakened by the parasites, mix caraway and fenugreek in their feed, of each a quarter of an ounce, once a day, for a week or so.

Hoven.—*Tympanitis or Drum-belly.* So called from the appearance and sound. The evolution, or giving off of carbonic acid gas, from the large quantity of grass or clover when wet, contained within the rumen or paunch, together with the suspension of the function of digestion, and peristaltic action of the bowels—all of which combined, go to make up the disease called hoven. Hoven may occur in one hour, for we often see cows turned out to pasture in the morning, and are almost found suffocated in an hour afterward. In cases of this kind there is obviously no time to be lost. Every farmer should be prepared to meet and cure them as they occur, there being no time to run for assistance.

Cause. Over filling the paunch, and in too quick a time—before the stomach has time to act upon it; hence fermentation is set up.

Symptoms. Great distress; the sides are distended, and when struck, sound like a drum, the beast lying and rising; the breathing is hurried; there is great suffering, and if not speedily relieved, the rumen will give way, burst or rupture; if this does not happen shortly, the brain becomes affected, and the beast dies unconscious. The disease runs its course with fearful rapidity.



TROCAR, WITH CANULA.

Treatment. At once plunge a dinner knife, well sharpened, into the side, or at equal distance from the haunch

bone and short rib, on the left side of the animal. Veterinary surgeons use a trocar for this purpose, and every farmer should have one also. If the case be not a severe one, it may be entrusted to time, nature and medicine. Give half a pound of table mustard, and an ounce of the chloride of lime, mixed in as little cold water as will float the mustard out of the bottle, and down the throat of the animal. Or, instead of the mustard and lime, give one ounce of *recently* powdered carbonate of ammonia in *cold* water. Dashing cold water over the loins of the beast often cures the affection, by inducing reflex action of the nervous centres of the body. Sometimes we see a *chronic* form of this complaint, occurring at intervals, owing to a debilitated condition of the walls of the rumen, which is cured by the following powder, given morning and night in the feed: Powdered ginger, half an ounce; gentian, half an ounce; fenugreek, half an ounce; mix, and give in one dose, and continue it for a few days.

Hydatids in the Brain.—This is a parasitic disease —a worm found floating in a serous fluid, surrounded by a sack or small bladder, and situated generally on one side of the brain, and under or near the base of the horn.

Cause. This affection is caused by the animal eating with the feed or grass, some of the ova or eggs which have been dropped from dogs, affected with tape-worms.

Symptoms. The affected beast will be observed in the early season of the disease, to be affected in one of the eyes, ending shortly in total blindness of that organ. This, however, is not always the case. The great symptom chiefly to be relied upon, is the constant turning of the animal in the form of a circle. This, the animal will always persist in doing, and stop only when brought in

contact with a stone wall or fence, which prevents further circular turning. Unfortunately, the poor animal comes in contact with the wall with such force, and so often repeated, that on that side of the head will be seen swellings and enlargements of the bones of the jaw. In this way does the affected beast turn from day to day until emaciated from weakness and hunger. The end of some cases is frequently hastened by their falling into holes, rivers, etc. The inability to stop turning prevents the animal from gathering food, and hence the case terminates in starvation.

Treatment. The success attending the treatment of such cases is very great. The cure consists in finding out the exact spot on the head over the hydatid, and boring through the bone with an instrument made for that purpose. As soon as the bone is bored through a small pair of forceps or tongs is put through it into the sack, and by this means, together with a syringe with a long nozzle to pump out what fluids there are in the cavity, the cure is completed. The hole, of course, will have to be closed by a pad or cloth, to exclude the air till it has closed by a new bone. (See Diseases of Sheep.)

Inflammation.—Inflammation is the same in all animals, but happily it is not common to the ox tribe. Indeed inflammation in all animals is not so common as it is usually represented to us to be. *Irritation* is oftener observed among animals and men, than inflammation, and disease with *decreased* force or power is more frequent than either diseases now-a-days; or, it may be, we are better educated, and thereby can more readily discern the true conditions of diseases, than men of former times; or, it may be from both causes combined, that we are able to

discern such a change in diseases. However, the majority of diseases, now met with, are of a low type, and require for treatment *not* bleeding, but medicines and good feeding, to support the powers of nature.

Impaction of the Omasum, or Third Stomach.—In some parts of the world this disease is called "wood evil." So called because the stomach is filled with leaves, dried bramble and sticks or twigs, from bushes. These articles being deficient in nutritive matter, cause the suspension of rumination (chewing the cud,) and digestion.

Causes. In addition to the causes above given, we may add that of dried grass, which has been left standing in the field; or in fact any kind of food, which does not contain essential principles for fat and blood making, in proportion to its bulk, is sure to bring on an attack of wood evil or impaction of the third stomach.

Symptoms. Loss of cud, loss of appetite, and quickened breathing, accompanied with a grunt. Diarrhœa is followed by constipation, great thirst; the legs, horns and ears are cold; grinding of the teeth, and when the disease has about run its course, *moaning* takes the place of the *grunt,* diarrhœa succeeds costiveness, and the poor beast dies exhausted. Examinations after death disclose a curious condition, namely: the third stomach is perfectly *stuffed* full with food, and it is so hard and dry, that it readily burns when fire is applied to it.

Treatment. Allow the animal plenty of cold water to drink, so that the mechanical effects thereof may be advantageous in assisting to wash, dilute and moisten the dry mass. Give strong purgatives. Take epsom salts, one pound; table salt, half a pound; oil of croton, fifteen drops; mix, and give in one dose, in fully a gallon of

water; for be it remembered that cattle should have all medicines given in large fluids, and it is more imperatively demanded in cases like this, where so much depends upon fluids. If twenty-four hours pass by without any effect from the salts, repeat the dose with an addition of two ounces of the spirits of turpentine. With this dose the purgative medicine should be stopped, whether it has had any effect or not. So long as the animal does not seem stupid or the brain be not affected, there are still hopes that recovery may reward our labors. (See Texan Fever.)

Jaundice.—*Icterus.* This is a common disease in the ox, from the fact that he is supplied with a gall bladder, and gall in great quantity. Jaundice may be properly called biliary intoxication, or distribution of bile throughout the whole circulation of the body.

Causes. Closure of the biliary ducts in the liver, and the consequent absorption of the bile into the stomach. The bile duct may be closed from gall-stones.

Symptoms. In white-skinned oxen, jaundice is seen at once from their yellow color. In dark-colored animals we are satisfied to examine the lining of the mouth, nose and eyes, for this yellow appearance. In addition to these signs, we have dullness and costiveness, while the dung is of a whitish or straw-colored look.

Treatment. If the symptoms be not very prominent, the animal may be left with safety to the powers of nature, which can be assisted by giving slop food, or placing it upon bare pasture for a few days. If the case be more of an acute kind, give a dose of purgative medicine, as follows: Epsom salts, one pound; table salt, half a pound; ginger, half an ounce; mix, and dissolve in four bottles of water, sweetened with molasses.

Kidney Disease.—Kidney disease in the ox is of a rare occurrence. Disease of the kidneys is more peculiar to animals, whose lives are allowed to run longer than those of oxen, especially when fat and fit for market.

Laryngitis.—(See Croup and Bronchitis.)

Leucorrhœa.—A discharge of muco-purulent matter from the womb and vagina of cows.

Cause. Debility and bloodless condition of the system.

Treatment. Iron, gentian, fenugreek, the mineral acids and good nourishing food are what is wanted to build up the system, and a weak solution of lime may be injected into the vagina once a day with a No. 6 syringe, to which is attached an 8-inch nozzle. Give the following powder, morning and night: Powdered sulphate of iron, two drachms; powdered gentain root, half an ounce; powdered ginger, half an ounce; fenugreek, half an ounce; mix, and give in one dose, and continue for a week. Commercial sulphuric acid in half ounce doses, by weight, may be given once a day in half a bucket of cold water, which the cow will readily drink.

Lice.—(See Lice in the first part of this book.)

Liver Disease.—(See Jaundice.)

Locked-jaw.—Kill the beast and dress it for market as soon as it is known that it is locked-jawed.

Lung Diseases.—(See Pleuro-pneumonia.)

Lymphangitis.—An affection of the ox tribe, following an accident, which partakes of some of the characteristics attending farcy in horses, but without any specific poison being developed.

Treatment. A dose of salts internally, and fomentations or poultices. Apply to the swelling and to the sores, if there be any, which will depend upon whether the skin gives way or not.

Malignant Catarrh.—(See Catarrhus, etc.)

Mammitis.—(See Garget.)

Mange.—(See Mange in the first part of this book.)

Milk Fever.—*Febris Lactea—Metria.* Milk fever occurs from the first to the third day after calving; rarely after the third day. It is seldom met with before the fourth calving, then attacking chiefly cows of select breeds, and good milkers. Milk fever consists in inflammation of the womb, which sometimes even extends to the bowels.

Symptoms. Loss of appetite; chewing the cud, or rumination ceases; staggering gait, wild look, falls and cannot rise. If the disease be not checked the brain will soon be affected also, when the cow will dash about with her head and horns plunging them into the ground.

Cause. Undue determination of the blood to the womb from over feeding before, and immediately after calving, and from sudden changes of the weather at the time of calving.

Prevention. Give, one week before calving, one pound of epsom salts, half a pound of table salt, and half an ounce of ground ginger, mixed in four bottles of cold water and sweetened with molasses. Let the cow's feed be of the lightest kind, such as hay and thin slop mashes, and no meal, grain or solid food. This measure will lessen the tendency to interruption of the circulation, and will improve the health and tone of the whole system. To avoid, as much as possible, the effects of sudden changes

of the weather, have the cow brought into the house. When milk fever is anticipated, give, a few hours after calving, twenty-five drops of the tincture of aconite root, which may be repeated every six hours, till four doses have been given. Nothing that I am acquainted with is as capable of equalizing the circulation of the blood by controlling the heart's action, and thereby the circulation, as aconite; and for this purpose I highly recommend it to farmers and breeders of stock throughout the country. The foregoing measures, together with light slop feeding for a few days after calving, I am sure will prevent much suffering to the cow, and inconvenience and loss to the owner.

Treatment. When the disease is present, give at once thirty drops of the tincture of aconite root, and half an ounce of the pure opium in powder, in a bottle of thin gruel. The aconite must be repeated every four hours without the opium, until four or five doses are given. Place chopped ice in a bag on the forehead, and attach it to the horns, renewing it when wanted. This being done quickly, at more leisure get epsom salts, one pound; table salt, one pound; ginger, half an ounce; mix, and dissolve in four bottles of cold water, with a little molasses to sweeten it, and give at one dose. After this medicine has been given, turn the cow from side to side every four hours, or when the aconite is given, which will save labor and unnecessary excitement to her. She should be left as quiet as possible, and her legs and body be kept warm, thereby relieving the womb to that extent. Do not deny pure air, nor plenty of cold water to the afflicted animal, for she not only needs them, but they are indispensible to a sure and perfect recovery in most diseases, and as much so if not more in a disease of this kind.

Milk Trembles.—This is a disease seen in the wooded country of the South and South-west, and depends upon cold, moisture and miasma. The disease disappears with improvements and clearing of the land from timber.

Treatment. Give gentian, ginger, and fenugreek, of each, half an ounce; mix, and make one dose, which may be repeated once in the day.

Moor Evil.—(See Red Water.)

Mouth Disease.—(See Epizootic Aphtha.)

Murrain.—This is one of the names given to diseases of cattle, which ought long ago to have been expunged from the books and writings of men who ought, if they do not, know that the word murrain means to die. By classical scholars, orators, and poets, the use of the word murrain may be taken as an indication that they have read Virgil, Homer and Horace; but when cow doctors talk about the murrain, it conveys the reverse idea to that entertained when used by the orator and poet. Cattle plagues and murrain are excellent names, whereby the ignorant pretender may gain credit among farmers and others, for a knowledge he never did possess. He may give the name of murrain to any disease or diseases, however different the one may be from the other in sign, symptom and seat, providing that the beast *die.* It will be observed, however, that if the animal should *live,* murrain can't be its proper name. Murrain, as applied to cattle diseases, conveys no idea of the nature or seat of the disease. In some parts of the world, murrain is applied to epizootic aphtha, a disease affecting the mouth and feet—*de la fievre aptheura*—and withal, not deadly or fatal. Without fatality, any intelligent person would naturally and knowingly think that there can be no murrain, and the absurdity

of the name so applied, can induce no very high opinion of cow doctors.

Nephritis.—This is a name given to a disease, or inflammation, of the kidneys. It is scarcely ever seen in the ox.

Nervous Diseases.—These may be classed as follows: Brain diseases, apoplexy, inflammation of the brain, palsy, paralysis, locked-jaw, twitching of the muscles, etc.

Œstromania.—A term applied to cows when bulling.

Œstrus Bovis.—The fly which deposits the eggs, from which the ox bot is developed.

Osseous.—Composed of bone; bony tumor.

Ovarian Dropsy.—This is a disease peculiar to milch cows, and consists of watery swellings of the ovary, but one ovary being usually affected. Ovarian dropsy is characterized by a large, soft swelling, situated upon the side of the cow, between the short rib and the thigh.

Treatment. Tap the tumor with an instrument called a trocar, whereby the fluid is let out. When this is done, feed the cow well, and give her iron, gentian and ginger, to prevent further accumulation.

Ovarian Tumor.—The difference between ovarian dropsy and ovarian tumor, as ascertained by the touch, is, the dropsy is soft and fluctuating, and the tumor hard and slightly movable. Ovarian tumors are generally hard, and similar to *cancroid* and *encephaloid* tumors found in man and animals.

Treatment. Fatten the animal, and kill and send her to market, before she dies and becomes a complete loss.

Palsy, or Paralysis.—This is a nervous disease, and

is characterized by the animal having lost the power of standing. Palsy may be partial or complete.

Cause. Tumors on the brain; injury to, or softening of the spinal cord.

Symptoms. Inability of the animal to move, continued laying; will usually eat and drink as if nothing were amiss, and will continue to do so for many weeks.

Treatment. We are in possession of only one drug, which is oftentimes of service in curing this disease, depending on whether the paralysis be from reflex action of the nerves of motion, or from entire suspension of feeling. If the case be from reflex action, then this medicine had better not be given; but if the nervous feeling be entirely lost, *strychnia* may then be given in one grain doses twice in the day in the animal's feed, and continued for a week or two.

Parasitic Lung Disease.—(See Hoose.)

Parturient Fever.—(See Milk Fever.)

Phthisis.—(See Consumption and Diarrhœa.)

Placenta.—This is a name given to the after-birth.

Plethora.—Fatness; full of blood.

Pleurisy.—This is inflammation of the pleuro, or white, fibrous, serous tissue lining the ribs within the chest, and the covering of the lungs. For further particulars, see the following article.

Pleuro-pneumonia.—"*Massachusetts Cattle Disease*" —*Epizootic Pleuro-pneumonia.* Pleuro-pneumonia is a compound disease, as its name indicates—pleuro and pneumonia. My own opinion is, however, and it is almost a certainty, I think, that the single name *pleurisy* would cover the whole ground; for the pathology of the disease

unmistakably points to this one fact, that the lungs are not affected as a disease from the beginning, but the solid, spotted and mottled condition of the lungs are but the effects of disease of the pleural covering, and the consequent effusions of serum into the chest, floating and surrounding the lungs, together with weakness, low vitality, and debility of the animal affected. This, then, is the reason why the lungs have become diseased, and the consequent double name given to the affection.

However much men may doubt it, this disease is nothing more than buccal inflammation, extending from the coverings of the mouth and nose down to the pleural membranes within the chest, speedily followed by extensive outpouring of fluid called serum, and it is not till this fluid has accumulated in sufficient quantity that the evidences of disease show itself to the farmer or breeder. Cows are not so nervous, nor yet so excitable as horses, whether in health or sickness, and hence the absence of those symptoms in the early stage of the disease in cows, which are so early shown in horses, when affected by the same sickness. Farmers should remember this, for in early detection lies often the life of the animal.

Again, and in support of my theory, if the lungs were one of the primary seats of the disease, it would not be reasonable to expect the animal to live for a week, and in some cases a month, as is the case with animals affected with this disease. In no disease of the lungs, excepting tubercles, will animals live so long as those do when affected with pleuro-pneumonia, thus entirely disproving the theory universally entertained by those who have an idea to offer upon the subject.

The length of time animals live with this disease, together with the serum, the condition of the lungs, and the

adhesions so often seen connecting the lungs with the sides of the chest, does not go to prove the incurability of the disease at all, as has been so often asserted, but on the contrary, it goes to show the curability of the disease, and the ignorance of those who have been guilty of so bold and unwarranted an assertion, thereby deceiving the honest cow keeper and breeder to their great loss, and in some cases to their ruin. Pleuro-pneumonia then I take to be a disease similar to typhoid influenza in the horse, affecting the white membranes of the nose, mouth, windpipe and chest, speedily followed by outpouring of fluid into the cavity of the thorax or chest, gradually increasing in volume, till the lungs are nearly submerged, solidifying them, thus arresting aeration, or proper oxygenation of the blood, together with shreds of plastic lymph connecting and interfering still further with the action of whatever healthy lung there may be left: and thus by a gradual, but progressive process, the vital power gives way, and the poor beast dies from suffocation, or asphyxia, in from one week to two months or more—depending if the cow be in calf, and what condition otherwise the animal may be in. The better the condition, the longer will they live, and the more likely are they to live, even without medicine, thus giving the lie to its incurability. (See Bronchitis.)

Cause. Some subtle poison in the atmosphere sometimes, which is not always present; sudden and severe changes in the temperature, cold, heat, dryness and moisture, easterly winds, and possibly some other conditions which may be present, but not recognized, and which give rise to what is called the predisposing cause, for since we have those various changes in the condition of the weather, without producing the disease, something is wanted in the animal economy to act as a predisposing cause, *two* causes being

necessary to produce epizootic disease, namely: the predisposing cause which resides in the system, and the exciting cause, which belongs to the atmosphere. Atmospheric cause is being clearly proven from the fact of the early symptoms of the disease being irritation of the mucous membranes of the nostrils, nose, eyes, etc. That this may be properly understood, let any person enter the too frequently over-heated lecture room or theatre, with its impure air, and on coming out to the keen air of night, how readily the membranes of the eyes drop tears, and sneezing from irritation of the nose takes place. Pleuro-pneumonia being a disease chiefly attacking milch cows and working oxen, and rarely affecting herds of cattle in the field, we are carried back again in our inquiries to the cow house, barn yard and its surroundings. There we find the slop feed stimulating the cow to over secretion of milk, and at the expense of her general health and condition—the smoking and putrefying dung heap—the imperfect ventilation and over-heated stable—the giving of stimulating feed, and immediately after turning the heated cow out to the cold, and sometimes frozen watering trough, to quench her thirst. In one or other of these anomalies, or all combined, will be found the cause of this epizootic disease—contagion, if it is really contagious, which I honestly doubt and even deny, however, if so, then they cannot be the *only exciting* and *predisposing* causes of the disease.

Symptoms. As has been already stated, the early symptoms are irritation of the membranes of the nose, windpipe, etc. The symptoms of this irritation are not perceived by the farmer, till effusions of fluid are poured into the chest in considerable quantities, interfering with the movements of the lungs, and consequently the breathing or respiration:

then—and then only does the farmer observe that the animal is sick. The presence of irritation in the windpipe can be detected by placing the ear close to the windpipe, previously tightening the skin upon it, when a slight grating sound is heard. The immediate effect of irritation of the windpipe of the cow, is a slight discharge of an acrid fluid, of the appearance of water, from the corners of the eyes and nose, which is, however, sometimes so slight that most persons fail to see it, and if they did, would attach no importance to it—so the first, and most important time and symptom is passed by uncared for, unheeded and unchecked. The next and important symptom is a half involuntary cough, or rather a *husking* sound—not the clear cough which horses give, when similarly affected. When cough is heard, it may then be said the *incubative* stage has passed away. I have said incubative, although not believing in the existence of such a thing, if it be not in the *passive* condition of the minds of men, who give credence to such a theory. The milk now becomes smaller in quantity, thin and blue; cough louder and oftener; breathing quick and labored, accompanied with a *grunt;* rumination is irregular, and the appetite precarious. Such then are the symptoms that may be seen by the ordinary observer. Auscultation and percussion applied to the sides of the chest, are not to be relied upon by persons who are not accustomed to the *chest murmurs,* or sounds in health and diseases. Animals in good condition rally from the attack and get well, without assistance from medicine or art. In weak and low conditioned animals, the disease and symptoms are gradual and progressive, and they finally die in from two weeks to two months.

Treatment. The success of the treatment here recommended, will depend upon, 1st. Whether the animal be in

good or low condition; 2d. Whether the cow be heavy with calf; 3d. Whether the disease has been discovered, and treatment applied in good season. These are important inquiries, having much depending upon them, for this disease is much more *frequent* and *fatal* in cows heavy with calf, and animals in low condition. If the disease has been observed within forty-eight hours from the time of attack, give the following powders every four hours between six o'clock in the morning and at ten at night, or at six, ten, two, six and ten o'clock:

Tincture of aconite root, two drachms and a half; powdered gentian root, three ounces; powdered ginger root, three ounces; sulphate of iron, two ounces; mix well, and divide into five powders and give as above directed. After the five powders have been given, continue with the same powders, but *without* the aconite, and give them only *three* times in the day, instead of five as above directed. Half an ounce of the sulphite of soda may be added to each powder with advantage. The powder will have to be mixed in a large bottle of water, and sweetened with molasses. Allow plenty of pure air, cold water and good strong feed, but not too much at a time; this will be better than thin, poor and non-strengthening slop, which is so injurious and deceptive, and so often recommended and adopted in cases of sickness. In the early stages of the disease, the carbonate of ammonia given in three drachm doses, along with the other powders, will do much good. There are two points I have ever sought to obtain, in the treatment of this disease. 1st, To maintain the appetite. 2d, To restore and maintain it, if it be lost.

Prolapsus Vaginæ.—*Procidenta.* This is a protrusion of the womb through the *vulva*, and is an accident of

frequent occurrence with cows when accumulating flesh fast, and also among cows, denominated bullers. Sometimes, however, it may be due to tumors, or dropsy in the womb or ovaries.

Treatment. If from ovarian disease, spay the cow, and in simple cases elevate the hind parts of the cow, by making the stall lower at front and higher behind, placing a pad on the parts, after the manner described, under the article *Falling of the Womb.*

Prolapsus Vesicœ.—(See Bladder, Diseases of the.)

Prurigo Vernalis.—This is a disease peculiar to the Spring of the year, and characterized by extreme itchiness—the body being covered with inflammatory spots, which discharge pus, and form scabs that fall off and leave the parts bald, or without hair.

Treatment. Give a dose of epsom salts, and fumigate the beast with sulphurous acid gas. (See Sulphurous Acid Gas, in article on Horse and Cattle Medicines.) Give good feeding and good shelter.

Puerpural Fever.—(See Milk Fever.)

Quarter Evil.—(See Black Leg.)

Railway Disease of Cattle.—The summer of 1867 showed very clearly the existence of a disease developed by the transportation of cattle to the markets of New York and other cities from the *saline* plains and pastures of the West. For the want of a better name, we have designated it as above, not being satisfied of its identity with that disease commonly called "Texan Fever;" because the cattle of Texas and of the Cherokee nation are not known to be *ever* sick from Texan or other diseases, except from

starvation in dry seasons, from which they have been known to die by thousands. (See Texan Fever.) Railway disease is characterized by weakness, debility, and fever, with complete absorption of all the fluids of the body. These conditions naturally arise, 1st. Because of the *salty* nature of much of their late pastures, which tend greatly to the loss of the animal fluids and increased desire for water as a consequence of the action of salt upon the animal economy. 2d. The crowding of large numbers in cars without food or water, except, perhaps, at long and insufficient intervals of time, together with want of air, proper attention, and expedition in their transportation during the heated season of the year.

Remove the cause, and the effect will cease, is particularly applicable to this disease.

Red Water.—This is a disease of milch cows soon after calving, and consists in an altered condition of the blood, in which the red globules are broken up, and the coloring matter which is called *hematosin* escapes and is passed with the urine.

Cause. Obscure, but assigned to local causes such as the peculiar properties of certain herbs or grasses which the cow feeds upon. My opinion, however, is that the cause will be found to be local congestion, the red coloring matter is but the product—red-colored serum.

Symptoms. Diarrhœa lasting for a day or two, followed by constipation; urine of a brown color changing to a deep red, and in the last and fatal stages to a black, resembling porter.

Post-mortem. Appearances confirm my opinion that it is local congestion that gives rise to red water. The liver and kidney being chiefly implicated.

Treatment. Give a strong dose of epsom and common table salt, one pound each, and half an ounce of ginger, dissolved in four bottles of water, and sweetened with molasses. Give mashes pretty well wet, and in a day or two follow by giving powdered ginger root, half an ounce; powdered gentian root, half an ounce; powdered fenugreek, half an ounce; mix, and make one dose; give one dose twice in the day, till sufficient improvement takes place to warrant no further medicine being given. To hasten recovery, give good and generous feeding, which will also assist in making blood for that which has been lost.

Reticulem.—The second stomach so called from *ret*, or net like, and is sometimes called the honeycomb.

Retroflexion of the Womb.—Retroflexion is said to be present when the canal is bent on itself.

Retroversion of the Womb.—This term is applied when the canal is straight.

Rheumatism.—(See Rheumatism in the first part of this book.)

Rinderpest.—This is the Dutch name for Cattle Plague. So much do I abhor the employment of such ignorant and unmeaning names, that I cannot but entertain a poor opinion of the scientific attainments of those who constantly use them. The disease will be found treated of under the article Typhus Contagiosus Boum, (contagious typhus of cattle.)

Ringworm.—This is a parasitic disease, and consists in the growth of cellular tumors on the skin. Young animals of one and two years are most subject to the attack of the parasites.

Symptoms. Broad and flattened elevations on the skin.

Treatment. If left to themselves they will die out in a year. The oxide of zinc ointment will speedily cure the affection. It is considered a contagious disease, although not a fatal one. (See Ointments in article on Horse and Cattle Medicines.)

Rot.—(See Diarrhœa and Consumption.)

Rumen or Paunch.—This is the first stomach, and is the receptacle for all food that is gathered, which is kept there till wanted, or till the rumen is full, when rumination is usually begun by contraction of the rumen upon its contents, whereby portions of the food are forced into the gullet and mouth, to be remasticated, and finally passed down the gullet again. It does not, however, pass over the *floor* of the canal this time, but separates the pillars, and goes, not into the rumen, but into the manyplus, or third stomach.

Rupture in Calves.—The rupture we are now considering is what is known by the name umbilical, which occurs in young colts and calves, and consists in the protrusion of a portion of the bowel and intestine through the navel, thus forming a small tumor. This condition is often congenital, or found on the calf at birth.

Treatment. Force the bowel up into the belly, gather the loose skin together, tie a well waxed cord tightly round it close to the belly, and a strong pin may be forced through the skin below the ligature or cord, to keep it from falling off before the loose skin comes away. In a few days the skin will fall off, leaving a healthy sore without any hole or rupture.

Another form of treatment is to place a bandage round the body, and a pad over the rupture, as is recommended for the same condition in colts, which see. Whatever

the plan that may be adopted for the cure of umbilical hernia in calves, they must be kept separate from one another, as each will *suck* the other, thus preventing closure of the rupture and healing of the parts.

Siberian Boil Plague.—*Carbuncular Disease.* This is one of those diseases affecting cattle on the Russian Siberian Steppes. It is a blood poison or pyemia, and is closely allied to the other Russian Steppe disease, commonly called rinderpest and cattle plague.

Slinking the Calf.—(See Abortion.)

Sore Throat.—(See Bronchitis.)

Spaying.—This is the name given to an operation for the removal of the ovaries or female testicles from the milch cow and young female oxen. The object for the removal of the ovaries from young cows that never have had a calf, is to prevent them from ever having a desire for the male, so that she will be the more easily fattened and fitted for the market. Young cows so operated upon, are henceforth called heifers.

Spayed Cows, the Advantages of.—The following are the reasons why dairymen should spay their cows, when not intended for breeding:

1. Spayed cows are more easily kept in good condition than cows not spayed.

2. They are less liable to sickness of an epizootic kind, and when sick, more certain and easy of cure.

3. When epizootic diseases are present in the vicinity, or even in the herd, spayed cows are always in condition, and fit for the butcher. To prevent loss and save expense in the treatment, with the attendant risk of loss of some, and loss of condition and milk of all that are affected, they

can be sold without loss—which is not the case with cows not spayed, and when pleuro-pneumonia is among them.

4. Spayed cows give the same quantity and quality of milk all the year round, if they are properly fed and cared for.

5. Ten spayed cows will give the year round as much milk as double the number of cows not spayed, thus saving the interest on the outlay for ten cows, together with the absence of risk from loss of some of the principal by death of one or more from sickness, or accident, not to speak of the feed of ten cows. Between the feed of ten cows and their manure, the farmer can best estimate the difference in value.

6. With spayed cows there is no risk to run from milk fever, nor trouble with cows called bullers.

7. To fatten a cow, spay her instead of giving her the bull, as is the present custom—by which feed and time are consumed, and the animal is not made very fat after all, for she has to provide the fattening substance to the calf in the womb, which, if she had been spayed, would have been appropriated to herself; nor is this all, for the calf in the belly of the cow is at once discounted by the butcher, as it is not a saleable article in market.

8. Spayed cows cannot abort or slink their calves.

Having thus had a bird's eye view of the advantages to be derived from spayed cows, let us look in the same manner at the disadvantages of spayed ones.

1. The expense of the operation and attendant risk of the animal dying—although this is not great, (about one in the hundred.) The expense of the operation will be from three to five dollars, which will depend upon the distance the operator has to travel, and how many animals are to be operated upon.

2. Spayed cows are apt to accumulate fat and flesh, so that they will become dry much sooner than cows not spayed. Still there can be little loss, for a fat cow is always ready for sale. These, then, are the objections to the spaying of cows, if objections they may be called. We now leave the subject to those who are more immediately interested.

Spleenic Apoplexy.—This is a new disease, consisting in engorgement of the spleen with blood, and the subsequent rupture of the organ, followed by death in from twelve to twenty-four hours from the time of attack.

Cause. This disease is clearly traceable to the new, and what is wrongfully called *improved* feeding and fattening of cattle. Food, rich in nutritive qualities, and deficient in fluids, is the great cause of spleenic apoplexy in cattle.

Symptoms. Constitutional disturbance is set up all at once, and no early symptoms manifested. The animal is well to every appearance at one time in the day and dead by evening. When the symptoms are seen, they are as follows: Colicky pains, twitching of the muscles, staggering gait, frothing from the mouth, and the urine colored and mixed with blood. The animal falls and dies, the immediate cause of death being coma, from derangement of the brain.

Treatment. Treat the case by way of prevention with low diet. No treatment, however well directed, is of any use when the disease has once manifested itself. Life is prolonged a few hours by blood letting, but no cure can be effected.

Spring Eruption.—(See Ringworm.)

Stomach Staggers.—(See Hoven.)

Strangulation.—(See Choking.)

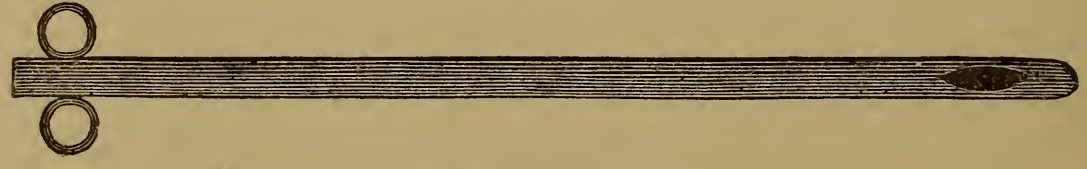
Sturdy.—(See Hydatides.)

Teats.—Teats of milch cows are often subject to diseases and derangement.

1st. Milk stones sometimes stop the flow of milk, and are felt within the milk channel, when the teat is pressed between the fingers. For their removal, take a silver probe or knitting needle, and, if possible, force the obstruction up into the udder.

2d. Strictures of the milk channel of the teat cause a small stream of milk to flow, and impair the usefulness of that quarter of the udder. This can also be remedied by using a silver probe or needle, commencing, however, with a small size, and gradually using thicker or larger ones, till the channel is as large as wanted. This operation will have to be carried on for a week or two, the first day using the small probe three times in the day, and following the next day with the larger size, and so continuing with other sizes, till finally cured.

3d. Warts are of occasional trouble to the cow, and to those who milk her. Irritation, and sometimes swelling is induced, which cause closure in the channel of the teat. Warts are to be removed by a pair of sharp scissors.



MILK SYPHON.

4th. Sore teats are cured by the simple ointment, one ounce, and one drachm of the rust of copper, commonly called verdigris, added to it. The milk can be drawn from the teat by means of a tube, as is shown by the above illustration, called a milk syphon.

Teeth, Diseased.—Diseases of the teeth in cattle are not so common as in horses. However, I have seen cases of a diseased tooth in cows, causing a bony enlargement on the lower jaw, and subsequently a fistulous opening, with discharges running from it. When disease of the roots of the upper teeth takes place, it is accompanied with a bad smelling discharge from the nostril on the side on which the diseased tooth is.

Texan Fever.—This is a disease accompanied with sympathetic fever, and is not confined to Texas alone; for we see it more or less every year in the Eastern and Middle States, showing itself at the close of the summer months, and to the end of autumn. Texan fever is nothing more than the Fardle Bound of the European writers—*impaction* of the manyplus with withered and dried grass and herbage containing no moisture whatever: the stomach refusing to digest it. Heat, dryness and fever of the system is thus set up, with all their attendant consequences.

Much has been said and written about the nature and cause of Texan Fever by nearly all persons who have had an idea upon the subject. The questionable theories promulgated throughout the country in regard to the disease by the Hon. Horace Capron, Commissioner of Agriculture at Washington, compel us to reiterate the fact that the affection *is* an *impaction* of the manyplus. Further than this, the bulletins that were issued from, or by authority of, the Agricultural Department, in 1867, concerning the discase, were not only unscientific and unsound, but in themselves contradictory, having no good effect upon those interested in the consumption of beef, and a positive injury to the cause of veterinary science in this country. Instead of a sensible view being taken as to the cause of the disease,

nothing short of *Fungi* would suit the minds of the Botanist and Microscopist. Their conclusions called to my mind the story of Paddy's flea, which, when he put his finger upon it, was not there. Texan Fever is a misnomer, and it is *not* known in Texas or amongst the cattle of Texas, but amongst those of other States. It is even *supposed* by many persons, well informed, that Texan cattle give disease to *other* cattle that subsequently graze on pastures trodden by them. How ridiculous and unreasonable is this theory when viewed in the light of science and common sense. How can healthy oxen, and from a healthy country, give or impart a disease they never had?—cattle that never were amongst others having anything infectious or contagious?—impossible! Has it never entered into the minds of Mr. Capron or Gamgee, that the droves of hungry cattle on their way to market, from the rich, nutritious *mesquit* grass of Texas, feed extensively upon the dried tuft or Buffalo and Bermuda grasses of the States through which they pass, in the latter months of summer, and succeeding a good grass growing spring? Or, if so, have they ever asked themselves whether this fact has anything to do with the cause of Texan Fever? This is not a subject for the microscopist, but simply demands of us that we look with the naked eye to things as they are—to the consumption by hungry cattle of whatever of *green* or *fresh* grass there is to be found; leaving to the *native* cattle the dry, innutritious, indigestible tufts, spindles and grass! This is undoubtedly the real cause of the disease, however much some persons may be disposed to doubt it. The Hon. John Wentworth, of Illinois, though not seeing the cause of the disease, placed his cattle in a cordon, while they were surrounded by Texan cattle. All of them escaped the disease. On the other hand, cattle grazing on the

pasture upon which the Texan cattle *had been*, became sick. Thus it is shown that our view of the cause of the disease is the only correct one; for, if it be not so, Mr. Wentworth's cattle, from their proximity to those from Texas, would have taken sick also. No fence or enclosure, when the wind blows towards it, can or will keep out atmospheric air impregnated with an infection.

Post-mortem. The heart, liver, lungs and spleen are congested; the gall bladder is swollen to several times its natural size, and filled with a dark, yellowish-brown fluid; the food in the stomach is in a hard, dry and caked condition, with no progress made towards digestion; the stomach is friable and easily torn. We would here add that though the spleen be enlarged, heavy, and filled with blood, it is not a sufficient reason for the Commissioner of Agriculture to call the disease "Spleenic Fever;" it is the effect of a cause, and not the disease itself.

Treatment. Give large doses of epsom or glauber salts, dissolved in great quantities of molasses water. If no relief follows in twenty-four hours, repeat the dose, bearing in mind all the while that great quantities of fluid or cold water is a means to overcome the dry condition of the impacted stomach. Indeed, the cure has a good deal of a mechanical nature about it, for large drenches of water with the salts, do not only assist their action, but in many cases wash and dissolve the dry feed into a soft mass or pulp, which will readily pass away, and the poor beast be relieved from pain, and cured. Suspect this disease when occurring after a good grass growing spring, succeeded by a dry, scorching summer, converting grass into spindles containing no moisture, and little nutritive properties.

Throat Diseases.—(See Bronchitis.)

Thrush.—(See Epizootic Aphtha.)

Tongue of the Ox.—We speak of the tongue of the ox not for the purpose of referring to its diseases, for that has already been done in speaking of aphtha. Our design is simply to explain the difference in appearance between the tongue of the horse and that of the ox; for occasionally they are seen side by side in provision stores and other places, and all sold as the tongue of the ox or cow. The appearance of a salted tongue of the horse is much shorter and broader at its tip, and is, withal, the finest looking. Those who are not aware of these facts are most likely to prefer and purchase the horse tongue to that of the ox. The ox tongue is long, and narrow at its point, and is used much the same as a cat handles its prehensile paw. The horse cannot do this, but gathers his food with his front teeth. *Avoid* the good-looking, broad and short tongue, and *choose* the long, narrow and irregular one; then you may be sure of the tongue of the ox.

Tubercle Disease.—(See Consumption and Diarrhœa.)

Tympanitis.—(See Hoven.)

Typhus Contagiosus Boum—Contagious Typhus of Cattle—Rinderpest—Cattle Plague—Steppe Disease—Loserdurre, etc.—This is one of those epizootic diseases which have, at distant and different periods of the world's history, attacked the ox tribe of Europe, and consists in inflammation and irritation of the fibrous, serous tissue, or white membranes of the nose, windpipe and chest, and instead of serum or fluid being poured out as a consequence, as is the case in epizootic pleuro-pneumonia, the membranes become deteriorated, portions become detached, and some partially adhere, but all decay, and become a dangerous poison, which is gradually absorbed

into the general circulation, speedily followed by fermentation of the blood within the body, resulting in boils, or small carbuncles containing pus, which soon break and discharge. All of this is accompanied by sympathetic fever, (typhus so called) gradual and progressive in its character, till the blood and tissue of the body are no longer fit for the purposes of life, and the animal dies an exhausted and miserable object, in from a few days to one, two and three weeks from the time of attack.

Causes. Certain conditions of the air and earth, as heat and moisture, cold and dryness; contagion. These may be called the exciting causes; something still being wanted in the system of the animal to form the predisposing cause —as debility, and a low standard of general health. Indeed, the conditions which sometimes exist in, and form pleuro-pneumonia, are capable of producing contagious typhus. I am borne out in this opinion by Jessen, who among the discordant opinions and theories of Europe, has declared the disease to be associated with pleuro-pneumonia. Dr. Greenhow also says that contagious typhus existed side by side with pulmonary disease in England, in the middle of the last century. Why theorize then any further, for it is so plain that those who run can read, that veterinary surgeons, politicians and notoriety hunters have, at the expense of the suffering farmers of Europe, continued to perplex and puzzle too long? The same has been attempted in Pennsylvania, and other States of the Union, even in cases of simple sporadic pleuro-pneumonia in milch cows, whereby, with a power of metamorphosis far outstripping that of *Publius Ovidius Naso*, the one disease has, as if by the wand of the magician, been converted at once into that of another.

Symptoms. We are told that the disease has its period

of incubation, varying from four to fourteen days. This is simply nonsense. Where is the repeated incubation in cows when affected with pleuro-pneumonia? Nowhere, but in the minds of men who know nothing of pathology. Is incubation to be taken for blindness, and ignorance for science and education? It may be asserted, with equal truth and justice, that the condemned culprit, or rather *suspended animation*, can date the period of incubation from the time of condemnation, however long that may be before the moment he is launched into eternity. The weeping eye, the acrid drop from the inner corner of the nostrils, together with slight rough sounds from the wind-pipe, will tell the intelligent and scientific observer that something is wrong, and all this can be told from twelve to twenty-four hours from the time of attack. Where, then, is the period of incubation? Echo seems to answer, where? The husky cough, with dullness and prostration, follow the weeping eye and nostril. The back is arched, appetite and rumination irregular, the rigor and the chill tell that blood poison is present, and suppuration is going on as a remedial and natural measure, to get rid of the foreign or poisonous matter in the blood. The breathing soon becomes labored, the heat of the body is variable, while the skin and hair look unhealthy, and fever gets high. If the mouth and nose be examined, eruptions and sores will be seen; and these sometimes extend to the feet. All the foregoing symptoms are now speedily followed by discharges, from the nose and eyes, of pus streaked with blood. Salivation and diarrhœa supervene, together with stupor, and all the phenomena of approaching death. In this disease, as in pleuro-pneumonia, cows heavy with calf or otherwise debilitated, die sooner, and do not bear up so well as animals in better condition. The intelligent

and careful reader cannot fail to see several prominent and important symptoms common alike to this disease and epizootic pleuro-pneumonia, (which see.)

Treatment. The correct method of treatment is at once apparent from the nature, symptoms and post-mortem, or appearances after death. All taken somatically and considered, amount to this, that the animal is affected with fermentation of the blood, consequent upon inflammation and deterioration of the fibrous, serous tissue of the body, accompanied with fever of a typhus type. Then the first thing to be done is, to build up the system and arrest fermentation by the elimination or neutralization of the zumin, leaven, or ferment. For this purpose then, order the following powder: Powdered carbonate of ammonia, one ounce; powdered sulphate of iron or copper, three drachms; powdered gentian root, half an ounce; powdered ginger root, half an ounce; mix, and make one dose. Give one dose of this powder morning and night. In the middle of the day give one ounce of sulphite of soda daily. The animal must be fed well and in a generous manner, but not by any means to arrest digestion by over feeding. Such, then, is about the plan I would recommend for the cure of contagious typhus in cattle. I would add however, or take from, just as the indications appeared. Thus, I would have them daily inhale for an hour sulphurous acid gas. For the manner of using it, see Horse and Cattle Medicines in this book.

The treatment here offered will cure a major part of all affected. The number will depend upon the condition of the animals, whether they are cows and with calf, or are debilitated animals, etc.

English Treatment. Professor Gamgee, the great veterinarian says, little can be done beyond *purging* the animal,

etc., and adds that all treatment appears futile. Now the word "appears," in this case, implies a *doubt*. Scientific men should be more emphatic and particular in the words used. If there is any one remedy to be avoided in this disease of cattle, it is purging or physicking. Will a dose of physic cure blood poison, build up the system, and arrest typhus? The person who says so is certainly not fit to give an opinion on this particular subject. Out of many evils, choose that which is the least; that is, restore the digestive functions with carminatives and tonics, and not physic; remove the cause of the derangement, and the effects will cease—but do not take the bull by the horns, or beard the lion in his den. A Mr. Dobson devotes nearly ten pages to the subject, and winds up with the following words: "We trust we have said enough to give our readers a fair idea of the nature and consequence of the Rinderpest." Mr. Dobson has not, as he seems to think, given either the true nature or pathology of the disease; and has not gone so far as Mr. Gamgee, for he has not even so much as hinted that there is a dose of physic in existence. His article, however, has proved one thing, and that is, that a man can write much about what he really does not understand. The treatment, according to Mr. Moore, the veterinary homœopathist, is nearer the right kind than any English author I have heard of; but Mr. Moore, to be successful, will have to throw his *infinitesimals* to the dogs, and increase his doses. There are other authors of less note, but all follow in one beaten track, from which there seems to be no variableness nor shadow of turning. The minds of Englishmen all follow in one direct line of march, and will continue to do so with a bewitchment similar to that which shut out the truth from the foolish Galatians.

Prevention. As has already been stated, it is a contagious disease, and to prevent its spread, isolation, or separation will have to be adopted.

Epizootic influenza in the horse, and pleuro-pneumonia in cattle, took twenty-one years to travel from Europe to the United States. Now, should contagious typhus in cattle travel at the same rate, we may expect to hear of it at any time. This disease broke out in England, in June, 1865, and in one year it destroyed two hundred and fifty thousand, eight hundred and seventy-five (250,875,) head of cattle. About thirty-three thousand, two hundred and thirty-five (33,235,) recovered; all the others died, or were killed to prevent contagion, and spread of the disease. To enter into a history of this disease would take up more time and space than can be afforded, and would only be a rehearsal of what is already recorded in regard to the visitation upon English cattle in 1865. For an English history of this disease in all parts of the world, the reader is referred to a work of eight to nine hundred pages by Professor Gamgee, published in London. In this work much printed matter is discernible, but there is a great scarcity of information. Parliamentary reports, an Order from Privy Council, letters, editorials and suggestions that had been contained in the London *Times*, together with the reports and actions of the International Veterinary Congress, held on the Continent of Europe, go to make up this large book.

Udder Diseases.—(See Garget.)

Urine, Bloody.—(See Red Water.)

Vaginal Catarrh.—A disease in old cows a few weeks after calving. It resembles, and is treated the same as *Leucorrhœa,* (which see.)

Varicella Boum.—(See Chicken Pox.)

Vertigo.—(See Stomach Staggers and Hoven.)

Warbles.—The product of the œstrus bovus, or ox fly, from having deposited its ova or egg in the skin. It is a disease peculiar to the summer months, and is characterized by tumors varying in size from a grain of corn to that of a hickory-nut.

Treatment. Squeeze the tumor and the larva is forced out.

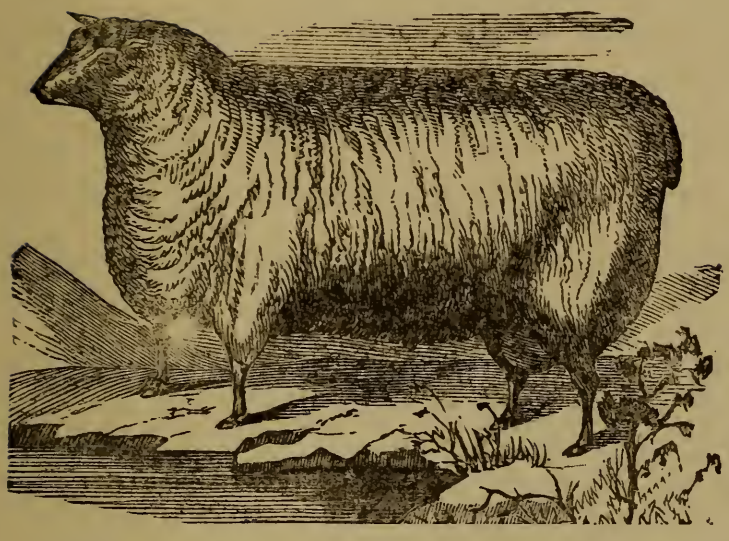
Water in the Chest.—(See Pleuro-pneumonia.)

Whites.—(See Leucorrhœa.)

Worms.—(See Hoose.)

Womb.—(See Falling of the Womb.)

DISEASES OF SHEEP.



For the following Essay on the Diseases of Sheep, Dr. Robert McClure was awarded a medal and diploma by the United States Agricultural Society:

The diseases of sheep which are laid under contribution are:—*First.* Those that are the most frequent and destructive, therefore of the greatest interest and concern to the sheep farmer. *Second.* Those in which treatment and preventative means can be employed with profit and success. *Third.* Those the pathology of which has been in a measure or entirely misunderstood, therefore wrongly treated, and the preventative measures neglected or misapplied.

These diseases will embrace a large number of maladies that have been treated of separately in the work by the late Wm. Youatt as independent affections, when literally a great many diseases alluded to by this indefatigable writer are but different degrees and conditions of the same morbid phenomena.

I would here say it is a pleasure to think that some addition has been made of late to the stock of veterinary knowledge as regards this useful animal, and I trust that the time is proximate when the good sense of American farmers will demand that a knowledge of the diseases and general management of sheep shall form a prominent feature in the education of the veterinary surgeon.

Braxy-Enterites.—(*Inflammation of the Bowels.*)—Inflammation of the bowels is commonly known by the unmeaning name of "Braxy."* It is a disease of more frequent occurrence among this class of domestic animals than any other I know of, chiefly affecting young sheep in their first year, and in cold and stormy weather, and exposed situations. It is not unfrequent when sheep have been feeding on turnips in the winter season, to find in the morning, after a cold, wet night, as many as a dozen, out of a few score, dead, dying, or affected by this disease.

Symptoms. They will be observed to be very restless; lying and rising; resting on one side, and then on the other; walking up and down as if looking for a place to lay down, but can find no place to suit.

Treatment. Give castor oil, two ounces; calomel, five grains; laudanum, two drachms; molasses, two ounces; beat up with an egg, and as much warm water as will be sufficient for a small drench, to be poured out of the stroupe or pipe of a common tea or coffee pot. Repeat this in half doses every six hours.

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* Sheep affected by this disease are generally on the turnip field, and in good condition. If so, and the animal is very sick, never attempt to cure; as in most cases death will take place before medical agents (be they ever so well directed) can take effect. Therefore, it will be the better plan to cut the neck, letting out the blood, thereby saving time and trouble, and preserving the mutton in good order.

Prevention. In stormy weather, and when they have been feeding upon turnips, particularly where fenced in, remove them to pasture a little elevated, and as sheltered as possible from the storm, until the weather improves, and the turnip or other fields become drier; place common or rock salt in covered troughs, which will tend to keep their bowels open. Salt is a good laxative for cattle and sheep.

Diarrhœa.—*Treatment.* Powdered opium, two grains; powdered gentian and powdered ginger, one drachm each; mix. To be given in an infusion of linseed, and repeated if necessary.

Hydrocephalus Hydatideus, Sturdy, etc.—A singular disease; a very prevalent and fatal one, if left to run its course; so much so, indeed, that in France alone, no less than one million sheep die yearly, or are destroyed by this pest of the ovine race. The symptoms by which this disease is accompanied are as follows: In the commencement, the animals will be observed to stop in the midst of their grazing, and then start away in a gallop over the field. They seem at times to be utterly unconscious of where they are, separating themselves from the rest of the herd. By-and-by they become dull, and have a peculiar staggering gait. If there is a brook or rivulet within their reach, you are almost sure to find them standing by it, apparently becoming giddy, not unfrequently tumbling in, and thus being lost. They lose flesh, the countenance becomes haggard, and subsequently, the animals thus affected commence a rotary motion, going round and round in the same direction, with the head inclined to the same side of the body. Now it almost ceases to feed or ruminate, as it cannot restrain the rotary

motions, and is becoming rapidly blind. Death generally ensues from starvation.

Veterinary writers and agriculturists have differed very materially as to the cause of hydatid, some attributing it to certain poisonous plants—but these have never been pointed out; others considering it a species of serous apoplexy, and others still contending that it arises from local weakness of the brain, etc., etc. Autopsical examinations have, however, proved it to arise from a different cause, viz.: *Cœnurias cerebralis*, or hydatid in the brain, found floating in a serous fluid, contained within a sac or bladder, thus constituting Sturdy, Gid, Turnsick, etc. It attacks sheep from the sixth to the eighteenth month.

* *Certainly* the most common cause consists in the lamb or young sheep picking from the pastures the ova or larvæ of the *tœnia solium*, which infests the shepherd's dog. If Echinococcus, polymorphus or *vetrinorium*, be swallowed by the dog, they are developed into tape-worm, with but few serrations. The minute ova are gathered and swallowed with the food of the sheep or lamb, and are taken up from the surface of the intestines. They find their way into the blood, and finding a convenient nidus among the loose textures of the brain, are there deposited. Nature sets to work and encloses these foreign bodies in a membranous sac, so that otherwise they may not produce fatal consequences, and in the short period of three months they are found to have reached the size of a filbert.

Conversely, if these hytatids are swallowed by the dog, they are developed into tape-worms. Hydatids may be prevented in sheep by curing or preventing tape-worms in other animals, especially the dog. As before mentioned, hydatids only affect young sheep, and spring from the ova

* Findlay Dun.

of the tænia. Herds managed without dogs are found to be quite free from the disease. However, dogs may be used with impunity when the sheep are upwards of eighteen months old.

Treatment. (The following is from the Practical Farmer, by the present writer.) The treatment of this infection, until lately, has been varied, barbarous, and cruel; one practising and recommending the cutting and pulling out the ears, and another of hunting the poor animals with dogs, and, if possible, running them over some precipice, frequently maiming or killing them. A strong knitting-needle forced up the nostrils has long been used, with occasional success; but a small case of instruments, consisting of four pieces, is much better and safer, and, if properly used, will cure from seventy to eighty sheep out of a hundred thus affected, and can be used by any intelligent shepherd or farmer with perfect safety. In operating, observe carefully the side to which the sheep turns, as it invariably turns to the side of the skull which is affected, and which must be first operated upon. Secure and tie fast all the four feet, and place the animal on a table. Let your assistant sit down on the end of the table. Clip away all wool from the brow, sides, and crown of the head. Ascertain, by the fingers, if the skull yields on pressure at any particular spot on the side to which the sheep turned: if so, shave the wool from the soft part. Use first the instrument with the adjusting screw, its use being to prepare for the other, it being made a little wider than the trocar, with canula, so that the silver may not be broken in piercing the bone. Care, however, must be taken to stop when the point is fairly through the skull: this is easily ascertained. The guard must then be screwed back. This done, take it out and insert the trocar and canula in

the same hole, until past the split in the silver canula; then withdraw the trocar, leaving the canula sticking in the head, when the water will be forced from the hydatid, showing that it has been pierced. Put the point of the syringe into the canula, and draw out repeatedly, emptying each time until no more water will come out, or the cyst, has been drawn into the canula, which now withdraw, taking care that the skin of the hydatid be caught hold of by the forceps, which the operator should have ready in his hand. Having removed the hydatid, leave the mouth of the wound open, only placing a piece of clean rag as a pledget over it, as water will escape for a day or two. Put on the angular hood to keep the cloth and padding in their place, and secure it by worsted ties. Care must be taken, if the sheep has not been able to eat for some days, that it get a bottle of gruel before operating, as the less disturbance it is subjected to for some hours after the operation the better, the brain taking a little time to adjust itself to the cavity that has been made by the removal of the hydatid. Neither must the sheep be put on too rich pasture, as on recovering they are apt to take too much food, which may cause inflammation in the head. Mark well the side that has been operated on, as it very frequently happens that there are more hydatids than one. In a week or two, if the sheep be observed turning to the opposite side, secure it a second time, and proceed as before. There are occasionally more than one or two in the same subject, and at the same time. Indeed, I have known as many as five, and not one of them less in size than the yolk of an egg. But two are quite common, one on each side of the brain, nearly under the seat of the horn. Occasionally there is one behind the first lobe of the brain, which is also easily taken out.

Louping Ill.—*Tabes Dorsalis—Phrenitis.* In every-day language this is properly called inflammation of the brain. Youatt, in his work on sheep, has been at the trouble to write out no less than six different diseases, all of which might have been treated under this head, being essentially the same in character, cause, and effect. It is characterized by extreme dullness, followed by excitement and madness. In horses, these symptoms continue for about two days; but in cattle and sheep, much longer. The seat of the disease is the *pia mater*, or the vascular internal membrane of the brain, which is found after death to be rough and yellow, with extravased lymph and serum at the base of the brain.

Treatment. Give *croton oil*, six drops; *syrup of ginger*, one tablespoonful; in a little gruel, so thin that it will run from the tea-pot. Apply cold water or ice to the head, and see that the poor animal does not hurt itself against the wall or fence.

The causes of this disease are sometimes the result of injury to the head. It also arises from other than external injuries, the principal of which are exposure to cold, and a powerful sun in an exposed situation. But the most common causes are the eating from the pasture poisoning plant, or weeds, as the atropa belladonna, (deadly night-shade,) conium maculatum, (common hemlock,) cicuta virosa, (water hemlock,) delphinium staphysagria, (staves-acre,) felis fœomina, (female fern,)—all of which, if taken in sufficient quantity, will produce disease in the brain. I could easily swell the list of poisonous plants, but it is not my intention to include in this work information of so unimportant a character.

Paronychia Ovium.—*Foot-rot.* This disease has

been more prevalent within the last thirty years than previous to that time, which is accounted for to some extent in the varieties and breeds of sheep and in the increasing number. So much is this so, that farmers cannot find highland pasture sufficient for them, and they are brought down and put on moist lowland pasture, where they can find plenty of food without travelling much; hence, the growth of horn is more than the wear, or the supply more than the demand. Subsequently the horn becomes over-grown and turns upon the sole, and bruising the sensitive structures, earth and sand soon find their way into the cavities produced, causing inflammation of the laminæ, lameness, and secretion of fetid pus.

Causes. As before stated, it results from an increased supply of horn which turns up from the toe, pressing upon and irritating the sensitive structures of the foot.

This affection of the feet is almost certain to follow the removal of heavy bred sheep, such as the black-faced Cheviot and Southdown, from their native and upland pastures to rich meadow and arable lands. Their native walks being rough and rugged—the grass not so plenty, which insure the sheep walking over a large tract of land in order to procure their food—hence the waste and supply of hoof is balanced.

Treatment. Whenever the sheep is observed to go lame, it must be caught and the feet examined. Remove all filth and sand; then cut off every loose and unsound portion of horn with a stout pocket knife, and apply the following to the sore parts: Oil of turpentine, two ounces; sulphuric acid, half an ounce; olive oil, one ounce; mix. To be applied with a small piece of sponge or cloth on the end of a stick; or a goose feather will answer very well. If sores occur on the digital space (divisions) or elsewhere,

they should be touched with nitric acid or a little of the old butter of antimony, (terchloride of antimony,) by means of a feather. These appliances should be continued twice weekly, or as often as is necessary, until a change for the better takes place.

Prevention. To prevent this disease, the growth of horn must be kept down; and if the sheep are on soft land, they must be examined every month, and the superfluous horn must be cut off. Some shepherds advocate driving along a hard road to wear the hoofs; I do not recommend such a course, as it does sheep a great deal of harm. The better way is to drive them into a sheepfold and examine their feet.

Draining and liming the land very often puts a stop to foot-rot; the drainage to harden and dry the land, the liming to remove the soft, mossy herbage which is a great cause of the disease in sheep. It is not contagious in sheep; but in cattle, occurring in connection with murrain or vesicular epizootic, it is deadly contagious.

Pneumonia.—*Treatment.* Nitre, one drachm; digitalis, twenty grains; tartar emetic, twenty grains; mix. To be given in linseed tea, once per day, in inflammation of the lungs, common cold accompanied with fever, or any disease, that is necessary to arrest the inordinate action of the heart.

Psora.—*Scabies—Scab.* When a sheep or flock of sheep are affected with scab, which is easily known by their continually standing by the fence and rubbing posts, scratching, and tearing the wool off their back and sides, they will scarcely ever be seen grazing or lying down quietly and remasticating their food, as is the case with sheep in perfect health. This disease in sheep is the same as mange in horses, dogs and cattle; and it is the result of

the attacks of minute insects, or mites (acari) burrowing in the skin, producing great irritation and itching, and manifesting itself in small pimples, with dryness, scurfiness and baldness of the skin. This disease is contagious; therefore, to prevent the spread of the infection, the healthy must be separated from the diseased sheep. Keeping sheep clean, and occasionally washing in the summer season, in a great measure prevents a suitable nidus for the *acari*, and diminishes the prevalence of scab. Before putting healthy sheep on the same pasture, it will be necessary to wash all the rubbing posts with the solution of the chloride, or common lime, which will literally burn up the virus. To make the impossibility of infection doubly sure, (neat cattle and cows are as liable to take it as sheep) the best plan is to take a crop of hay and turn it over for a crop of corn, or any other purpose.

Treatment. The object to be attained in curing this disease is the destruction of the *acari*, which is necessarily the same in all animals; but in sheep the material used must be in a fluid form, so as to penetrate the wool.

The following is both an excellent cure and preventative of scab in sheep: *R. Acid Arseniosi*, lbij; *Sulph. Ferri*, lb. ccv; *Aquæ*, cong. lxv. *Translation.*—Powdered arsenious acid, two pounds; sulphate of iron, two hundred and five pounds; water, sixty-five gallons; mix. Boil until the fluid is reduced to one-third, and then add as much water as has been lost by evaporation. This preparation is the celebrated "Bain de Tessier," so highly prized in France. The following will answer the same purpose, which will not stain the wool, as it contains no sulphate of iron, and will, no doubt, be preferred by many to the preceding one on that account: Arsenious acid, two pounds; sulphate of zinc, ten pounds; water, sixty gallons; mix.

Prepare as the foregoing one. Each of these valuable sheep-dipping mixtures are sufficient to cure and dip one hundred sheep.

The way sheep-dipping mixtures are sometimes used is far wrong, as was the case in the celebrated sheep-poisoning case at Burton, England, where the animals were driven, immediately after their bath, containing twenty ounces of arsenic, twenty ounces of soda-ash, and two ounces of sulphur, to their pasture, with their wool saturated with it, and consequently dripping from the wool on the grass that the sheep were just eating.

The improved plan in dipping sheep is: *First.* The solution or the mixture is to be put in a tub, or other vessel, sufficiently large to allow the sheep (except the head) to be immersed in it, without the mixture running over the sides of the tub or vessel. *Second.* When the sheep is taken out, it must be placed in another tub or vessel, and the liquid pressed from the wool, and returned again into the dipping vessel. *Third.* The sheep must be kept enclosed in a sheep-fold, or other sufficiently airy place, where there is no food of any kind that a sheep will eat, until the wool is perfectly dry.

Several of the veterinary professors of the Edinburgh veterinary colleges, after the above sheep-poisoning case occurred, instituted a series of experiments to prove whether arsenical baths were dangerous, and if sheep could be poisoned by immersion therein. The following is the result of their experience. ("Edinburgh Veterinary Review" for April, 1859.)

First. That the immersion of sheep *whether sound, or suffering from scab, with extensive eruptions or "foot-rot," with free exposure of the vascular structure of the feet,* in arsenical solutions, varying in strength, is unattended

by prejudicial effects, and proves salutary to the diseased animals.

Second. That the congregating of sheep after dipping, where food is not allowed them, is unattended with danger; and I can distinctly testify to the absence of all risk from sheep licking each other.

Third. That all sheep having remained damp from twenty-four to thirty-six hours after being dipped, cutaneous absorption of arsenical solution might have been going on rapidly during the prolonged period in which the sheep continued wet; but no unfavorable symptoms ensued, —indeed the reverse.

Fourth. The absence of the slightest change in health, or of the manifestation of symptoms which usually ensue on the administration of arsenic to the lower animals, even in medicinal doses by the mouth, leads us to infer that if a minute quantity of arsenic, in solution, can penetrate the system of a sheep by absorption by the skin, it is quite insufficient to develop the physiological action of the compound.

Fifth. A solution of arsenic is not more readily absorbed from limited abraded surfaces than from the healthy skin, owing probably to the arsenic acting as an astringent on the sores, and rendering the latter as impenetrable, *probably*, as the uninjured skin. This remark does not apply to large wounds.

Sixth. It appears *impossible to poison sheep by bathing them* in arsenical solutions, provided the liquor is not introduced *directly* or *indirectly* into the stomach by the mouth. By the *direct means of introduction* of the constituents of a "dripping mixture" in the stomach of a sheep, is meant making the sheep swallow the liquid whilst being bathed; and by the *indirect means* is implied the

penetration of arsenical solution into the stomach by food poisoned by the liquid dropping from the bodies of the sheep, the wool of which has not been pressed, or from a number of sheep injudiciously congregated over food they subsequently eat.

Seventh. Arsenical solutions, whether *weaker* than ordinary dipping mixtures, or *much stronger*, are likewise incapable of being absorbed by the skin of sheep or man.

Eighth. Sheep will partake of grass and other food which has been smeared or soaked with an arsenical solution, notwithstanding the presence of soft soap and soda.

Arsenical baths and mixtures are not only used for the cure and prevention of scab, but are the most highly, and, I think, justly valued preservatives of the fleece of sheep, and are a protection to the propagation of many parasites.

Rot—Cachexia Aquosa.—*Chlorosis.* The very name of this disease is a terror to many sheep farmers who have suffered and lost so much by it. It is so destructive amongst sheep, that it is estimated that in the rainy winters of 1829–30 two million sheep died or were destroyed by this disease alone. It again made its appearance in Great Britain during the very wet years 1852–53. The symptoms by which this disease can be detected in its early stage are very latent; but if there are suspicions of this disease, it can readily be detected by the color of the mucous membranes, or the fauces of the mouth; the appendages of the eye being of a pale yellow; the animal costive, and the urine of a high color, thus indicating disease of the liver. As the disease is more advanced there is little difficulty in coming to a true and proper diagnosis of the case, as all the muscular fibres assume a uniform yellow brown color, and the wool has a matted

and dry appearance, and subsequently the muscles waste, and digestion is impaired, and at length the animal dies in from two to four months. Where a flock of sheep do not thrive and acquire fat and flesh on good feed and pasture, something must be wrong, and the sooner it is found out the better, as they may have acquired the disease before they were bought. The better way would be to have one of the worst ones brought in and destroyed, and then have a thorough examination, which will set everything to rest, and point out the line of duty which is open to be pursued in the treatment and prevention of the disease, ere it be too late to do good.

It is very frequent in wet seasons, in wet and undrained lands, and is characterized by an enlarged and softened condition of the liver, and accumulation of the common fluke (distomum hepaticum,) in the biliary ducts and gall bladder.

Post-mortem appearances show most clearly the nature and extent of the disease, as before mentioned. There is found a large number of these flukes in the liver, and that organ very much enlarged, soft, and flabby; the bile and all the serous fluids are of a yellow color, and, on account of the debilitating nature of the disease, a large quantity of the exudative matter is found in the belly and chest. There is one appearance that will never deceive: the liver is not of that pale and, I would say, cooked appearance which is usually presented after ordinary "Hepatitis;" but in most cases is all covered with livid spots not unlike the mottled appearance of the lungs of cattle that have died of epizootic pleuro-pneumonia. In a word, the liver is the only true seat of this disease.

Cause. The cause of this disease, until lately, was often a surmise and supposition. Then the question arose, why

it has been a precept with careful shepherds not to let the sheep graze on dewy grass, or wet and marshy land? Why the dew and wet land was considered so dangerous none could tell, and least of all the bucolic guardian. Although unable to give a reason why, he could aver and prove that it was so. The *rational* conclusion is, that many creatures pass the early portion of their predatory existence in the bodies of one species of animal, and their maturity in another. Their eggs are deposited in the former, but are not developed until expelled and cast upon the earth or manure-heap to shift for themselves.

They lie on the smoking dung-pile or such places, and far away from the sheep, in which they can find food and develop themselves. The rain washes them into the earth, or they are carried to the fields with the manure. The humidity serves to develop them; they fix themselves upon the moist grass, and with it these tiny enotozoa are carried into the stomachs of the sheep. Once there, their work is soon accomplished.

Treatment. The successful treatment of this disease embraces particularly that of prevention. As before mentioned, it is chiefly caused by wet and damp pasture lands—hence the proposition for their restoration will be, *First*, their removal to a high and healthy pasture, giving them hay and nourishing food, such as a little bruised oil cake, or linseed-meal, and placing covered troughs in the field containing rock, or common salt, which sheep are very fond of licking, and which moreover regulates their bowels, and gives them an appetite for food and water. *Second*, give each sheep epsom salts, two ounces; oil of turpentine, one ounce; pulverized ginger, half an ounce. To be given in half a pint of molasses-water, to be followed up with tonics, if they are found necessary. The following

will answer a good purpose: Sulphate of iron, in powder, ten grains; gentian, in powder, thirty grains; ginger, in powder, thirty grains. To be given in linseed-meal gruel once a day for a few days. It is the experience of almost every sheep-farmer, and sometimes too dearly bought, that to place sheep on wet and marshy land, even for a few days, is certain to generate this disease, notwithstanding the animals may have been in perfect health prior to his placing them there. Before placing sheep on pasture where there is access to any bog or marsh, it will amply repay the time and trouble to fence it in; or have sufficient sheep-drains opened through it six months before any sheep are put on it.

Sheep-drains are wide, and not filled up with tiles or stones, but left open. The shepherd can find time to keep both the sheep in order, and the drains clean of rubbish, except in the lambing and clipping season.

Sheep Laurel, Poisoning by.—*Kalmia.* A shrub, the leaves and young twigs of which sheep and lambs are very fond, and when eaten by them to considerable quantity gives rise to a disease called hoven or impaction of the rumen, accompanied by a staggering gait, sleepiness, and inability to walk.

Treatment. To be successful must be timely as well as energetic, with a view to arousing the power of the stomach, and for this purpose two drachm doses of the spirits of ammonia may be given in a tumbler full of cold water once in the hour, till three or four doses are given; withholding the medicine when the animal recovers, though one dose only has been given.

Small-pox.—*Variola Ovina.* Fortunately this disease has as yet been confined to Europe, and more especially

the continental portion, where it may be said to be never absent. In France and Italy it occurs frequently, and causes much loss and destruction. England was visited with it in 1847, when it was communicated to a flock at Datchett, and another at Pinnar, by some Merinoes from Spain. In 1862 it again occurred, but this time very suddenly, and in a very severe form among the flocks of Wiltshire; for which re-appearance neither infection nor traceable contagion could be assigned as the cause. The light shed upon it makes it appear to be an instance of the origination of a more malignant type of variola ovina. Such is, in fact, assigned to this disease in Africa, it being well established that certain injurious atmospheric influences produce skin diseases and facilitate the appearance of pustular eruptions. From the nature of the disease in its being produced both by atmospheric causes and contagion, it soon assumes an epizootic form, and causes more destruction than any other malady affecting this useful animal. Out of a flock of 1720, ninety-two were attacked in a natural way, of which fifty per cent. died. Of eight hundred inoculated cases, only thirty-six per cent. died. The mortality from this disease is never less than twenty-five per cent., and not unfrequently whole flocks have been swept away, death taking place in the early stages of the eruption, and others in suppurative and ulcerative stages.

Symptoms. These may be mapped out as follows: The animal is seized with a shivering fit, succeeded by stupidity, which remains till death or recovery takes place. On the second or third day pimples are seen on the inside of the thighs and arm-pits, accompanied with redness of the eyes, complete loss of appetite and other symptoms which are common to other diseases of the same animal.

Prevention. Two plans are resorted to for the purpose of preventing the spread of the affection, which promise a certainty of success. The first and best plan is, isolation and destruction. This plan proved a great protection to the sheep farmers of Wiltshire, in 1862. In well known epizootic diseases, where individual cases occur and are pointed out and well recognized, as soon as the fever sets in, and before the eruptions appear, they should be slaughtered at once and buried. The loss of one or two sheep is nothing to the consequences of the spread of a disease of this kind. By doing so the disease has been known to be confined to a few cases in a large flock.

Treatment. In treating this disease, resort has been had to a plant called *sarracenia purpura*, Indian cup, or pitcher plant, which is used for treating this disease in man by the Micmac tribe of Indians in British North America. (See Horse and Cattle Medicines in this book.) Take from one to two ounces of the root, (dried if to be had) and slice it in thin pieces; place in an earthen pot; add a quart of cold water, and allow the liquid to simmer gently over a slow, steady fire from two to three hours, so as to lose one-fourth of the quantity. Give of this tea or decoction three wine-glassfuls at once, and the same quantity from four to six hours after, when a cure will generally be effected. Weaker and smaller doses are certain preventives of small-pox, whether in men or animals. The public are indebted to Dr. Norris, Physician to the Halifax (Nova Scotia) Dispensary, for the manner of preparing this highly important article. Sulphurous acid gas will be found useful in small-pox. For manner of using, see Horse and Cattle Medicines in this book.

HORSE AND CATTLE MEDICINES.

MEDICINE CHEST.

It was remarked by one of South Carolina's learned sons, who has long and honorably filled the chair of Therapeutics in the Jefferson Medical College of Philadelphia, "Give me mercury, iodine, quinine and the lancet, and I will combat with disease." Without altogether endorsing the views of the distinguished professor, either in the choice or numbers of medicines he thinks necessary, or sufficient to cure disease, I would say, give me aconite, iodine, iron, mineral acid, soda, creosote, and a few others, and I will not only combat, but successfully cure and overcome disease.

Every article in use by myself in the treatment of diseases will be described under the name by which it is best

known. No attempt will be made to describe adulterations in the drugs spoken of. Many useful plants containing high curative properties are to be found all over this country, which will be well worth special attention.

Acids.—These are derived from the mineral, vegetable and animal kingdoms, and are of a sour taste—hence the name acid. Some acids are solid, others fluid, and all are easily dissolved in water. Acids are mostly poisonous, except when highly diluted, or mixed with water.

Acetic Acid.—This acid is eight times stronger than ordinary vinegar.

Use. Sometimes used in sprains, and for the destruction of the poison of insects, by adding one ounce of camphor to four ounces of the acid.

Pyroligneous Acid.—This is gotten by the distillation of wood, and sometimes sold in a diluted form as white vinegar. It is used with salt by horsemen for sore backs and shoulders.

Muriatic Acid.—This is commonly called the *spirit of salt.*

Use. A good tonic in debilitating diseases in horses and cattle, and can be advantageously employed in pleuro-pneumonia in cattle, for it relieves the quick breathing, and keeps up the strength.

Dose. Forty to sixty drops given largely diluted, or mixed with cold water, and repeated three to four times in the day.

Externally, it is used for sores in the feet of horses, by pouring a few drops in the nail-hole or sore. Ten drops poured into the fistulous openings of poll-evil, or quittor in the foot, daily, sometimes cure the disease.

Nitric Acid, or Aqua Fortis.—This, given properly,

and largely diluted, is an excellent tonic, and is used for the same purpose, and in the same doses as the preceding.

SULPHURIC ACID.—Possibly this acid is preferable to any other of the acids for *internal* use, in weakness and debility. It is given in from forty to sixty drop doses, also largely diluted with water. Horses and cattle will usually drink water, when acid is in it. In all kinds of fevers, sulphuric acid is an excellent medicine to give. In mixing it, the acid is to be added to the water, not the water to the acid.

PRUSSIC ACID.—A highly dangerous poison. There are two forms of this acid kept in the drug stores. Scheels' contains five per cent., and that of colleges about two per cent.

Use. Given in locked-jaw in the horse with considerable success.

MINIMUM, OR DROP MEASURE.

GRADUATED MEASURE.

Dose. Half to one drachm once a day. If the horse be young, half a drachm will be enough. Two drops to the ounce of water is an excellent wash to the skin of all animals, in mange and inveterate itching. Great care, however, must be exercised in its use, whether internally or externally. It is sold under the name of hydrocianic acid.

ACONITE.—*Aconitum Napellus—Wolfsbane—Monkshood.*

An active poison, and one of the garden plants of parts of Europe. The tincture is that portion which is used in diseases of horses and cattle.

TINCTURE OF ACONITE ROOT.—One of the most powerful, certain and successful sedatives which can be used. It has done away with bleeding, blistering and physicking, which were formerly thought proper agents wherewith to combat and cure disease. It is not only sedative, but it is a nauseant, calmative, anodyne, stimulant, diaphoretic and antiphlogistic. It controls fever, and allays pain and inflammation; and is the only medicine, excepting hellabore, which can excite the horse, the ox, or the elephant, to vomit. Although these animals cannot vomit, it is the one to cause them to make the effort. If, according to the founder of homœopathy, mercury was a *divine* metal, no less surely may aconite be considered a divine vegetable; for without it, or something as good, what can be so successful in curing lung fever, founder, inflammation of any part of the body, colic from eating green food, and fever accompanying cattle diseases of whatever kind? Nothing controls the circulation and action of the heart so promptly as aconite. The nervous centres of the body are no less ready to obey its action. Hence, its value in allaying fever, irritation, excitement and pain, from whatever cause.

How to use it. Aconite should never be carried too far, or prostration and weakness will follow. Never give more than eight doses, when twenty drops are the dose, nor more than six doses when twenty-five drops are the dose. Or, in other words, never, in any disease, give more than two drachms, or one hundred and twenty drops, whether the dose has been ten, twenty or twenty-five drops. In pleuro-pneumonia and other diseases, iron and the mineral acids should follow aconite.

Alcohol.—Spirits of wine entirely free from water, and is used for making tinctures of the various plants. It is the foundation of many lotions and liniments. Alcohol may be given to horses having a chill, in half pint doses, mixed with a little warm water, not too hot.

Aloes.—This is the expressed juice of several plants of same name. Aloes are of several varieties: Barbadoes, Socotorine, Cape, and Hepatic—all of which differ in color, and some of them in strength. Barbadoes and the Socotorine are the varieties kept in the drug stores.

Use. Aloes is used as a purgative, or cathartic, for horses only. Cattle do not respond to aloes, nor is it a proper internal medicine for those animals.

Dose. From six to eight drachms, made into a bolus, or ball, with two drachms of powdered ginger, and molasses, to cause them to stick together.

Tincture of aloes is an excellent application to a healthy sore. In the form of a compound tincture, which is composed of aloes and myrrh, it is preferred, by some persons, to the simple tincture.

Alum.—A compound salt, containing sulphuric acid, potash, and alumina.

Use. It is applied to sores, to arrest bleeding, and in the form of burnt alum, is used to touch indolent sores, which are not disposed to heal quickly.

Ammonia.—Liquid ammonia is commonly called spirits of hartshorn.

Use. A diffusable stimulant, and is given in cases of flatulent colic. Formerly it was in much repute among farriers, mixed with oil, as a liniment, but it is not now considered of much value, and is apt to blemish.

Dose. Two drachms to half an ounce, as an anti-spasmodic, in flatulent colic.

CARBONATE OF AMMONIA.—A highly valuable medicine, when given in weakness, debility, and prostration, from influenza, lung fever, bronchitis, etc.

Dose. From two drachms, to half an ounce, which may be repeated three times in the day, and should be given, mixed in cold gruel, so that the latent, or hidden heat, will not be developed, as it would be, if given in anything warm, thereby scalding the throat while drenching.

MURIATE OF AMMONIA.—This possesses the same properties as the above, but is not so strong.

ACETATE OF AMMONIA.—Is made extemporaneously, by dissolving the carbonate in strong acetic acid, till effervescence ceases; then, adding water to it, till it is of the strength of ordinary vinegar.

Use. An excellent form of ammonia when given in weakness and debility. Indeed, ammonia, and its several preparations, need only to be used, to convince of their utility, in supporting the vital powers, and thereby curing disease.

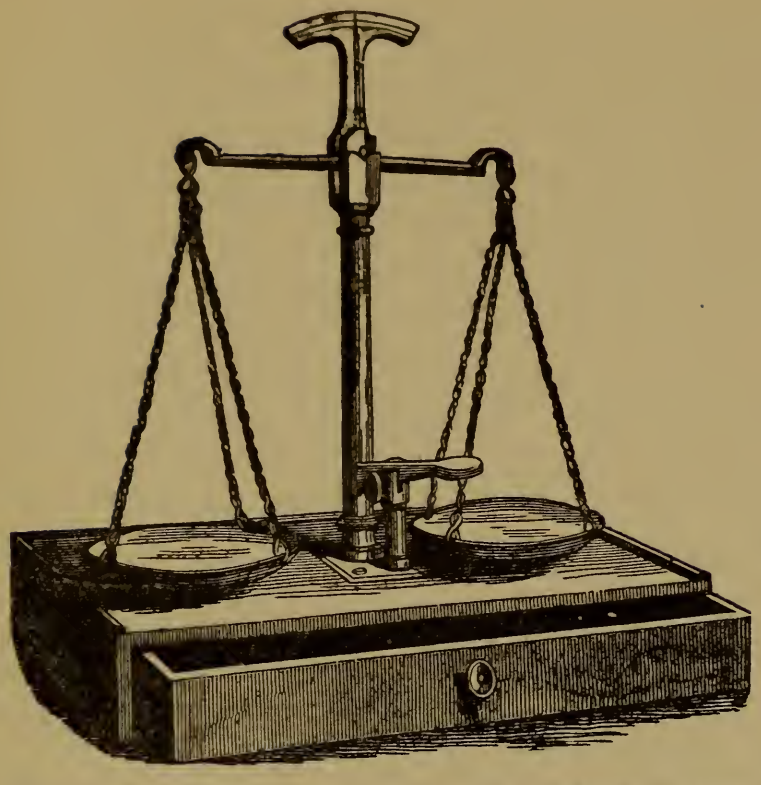
Anæsthetics.—Medicines which induce insensibility.

Aniseed.—A warm carminative, and used in conjunction with fenugreek, and cardamoms, in weed, and fevers in milch cows, and for indigestion, and loss of appetite in horses.

Dose. For horses and cows, one to two ounces, given three times in the day.

Anodynes.—These are medicines which allay pain. (See Aconite, Opium, Morphia, Chloroform, and Ether.)

Antimony.—A metal. Many preparations of antimony are kept in the drug stores.



BALANCE WEIGHING ONE GRAIN TO A FEW OUNCES.

TARTARIZED ANTIMONY.—This is commonly called *Tartar Emetic*, and was formerly relied upon in the treatment of lung, or chest diseases in horses, and cattle; but, to the great surprise of the knowing ones, recent experiments have shown that tartar emetic has no sedative effect whatever, upon horses, cattle, sheep or, other herbivorous animals. Pounds of tartar emetic have been given to horses, cattle, and sheep, without any effect, excepting increasing the appetite a little, and having no effect upon either the respiration, or circulation, whatever. Therefore, tartar emetic we will leave to the dogs and to man.

Tartar emetic ointment is sometimes recommended, to be applied to the region of the kidneys, where the Spanish fly dare not be used.

TER SULPHURET OF ANTIMONY, OR BLACK ANTIMONY.—This is a favorite, with many horsemen, for making a horse *shine*.

Ter Chloride of Antimony.—This is a useful medicine for diseases of the feet of horses, cattle, and sheep; it owes its properties to hydrochloric acid. It is commonly called, by old farriers, buttyre of antimony. In foul claw, in cattle, and sores in the feet of horses, a piece of cotton should be moistened with it, and laid upon the sore.

Antiseptics.—Medicines which arrest decay, and putrefaction.

Antispasmodics.—Medicines capable of relieving spasms, as in colic.

Areca Nut.—An effective cure for tape-worm in the dog.

Dose. About two grains of the nut, to every pound of the animal's weight, and given in the form of a pill, or suspended in milk.

Arnica Montana.—*Leopard's bane.*

Tincture of Arnica.—A valuable remedy for sprains and bruises. A lotion is made as follows: Tincture of arnica, one ounce; water, two ounces. Cloths, kept wet with it, should be laid on the part which is sore.

Arsenic.—A well known poison.

Use. A splendid tonic, improving health, condition, and wind of the horse.

Dose. When given once a day, five grains will be a safe dose, for an ordinary sized horse. If given twice a day, two and a half grains will be enough.

Arsenic should be given mixed in feed, in large bulk, such as cut feed, so as to protect the stomach as much as possible, whilst at the same time reaping its advantages. These doses should be continued at least for two weeks, stopping at that time for one week, and commencing again

as before. This will insure safety, with the benefits of the arsenic, and an improved condition in both wind and body. In Switzerland, and other parts of the world, arsenic is relied upon for the cure of heaves in the horse.

FOWLER'S SOLUTION OF ARSENIC.—Made as ordered by the colleges, contains four grains of arsenic, to the ounce of the solution, or fluid.

Asafœtida.—This is a gum-resin, having a smell like onions. Asafœtida is a stimulant and vermifuge, and is given to horses for loss of appetite, and to produce a fine silken coat upon them. It is given to dogs, to expel worms. Dose, for the horse and the cow, two drachms, and for dogs, ten to twenty grains.

Tincture. Where the stimulant effect is wanted, the tincture is a good form, and is given in about the same doses as the gum, for all animals.

Asarabacca.—This is used in horses where matter is lodged in the nares of the nose, and it is desirable that it should be brought down; and also in sheep and calves, with *faliria bronchi*, or worms in the air passages. For horses, blow a drachm up each nostril, out of a cone of paper, taking care that the person does not inhale it himself. For a flock of sheep, or a number of calves, confine them in a close shed, with sufficient air, and throw a considerable quantity among them, so the animals will inhale it. Sneezing and snorting take place, followed by mucous, and small worms, from the nose. This action is called *errhine*.

Astringents.—Medicines which are capable of drying up discharges, whether from the bowels, or from a sore. The principal medicines of this class are opium, tannin, oak-bark and chalk.

Atropine.—The active principle of Belladonna.

Belladonna.—*Atropia Belladona.*

Belladonna is used in veterinary practice for the same purposes as opium, but is to be preferred to opium on account of its having no binding effect on the bowels. The extract is the preparation used, and is prescribed in all animals, for colic, rheumatism, coughs, sore throat, bronchitis, influenza and locked-jaw. Doses, half a drachm to forty or fifty grains, dissolved in half an ounce of the sweet spirits of nitre, and repeated three times a day, in the diseases above mentioned. In diseases of the eye, it is considered valuable, as it has the power of contracting the iris of the eye, thus causing enlargement of the pupil, and breaking up adhesions between the *iris* and the *lens*. It also facilitates operations on the eye.

Benzoin.—A gum-resin, the tincture of which is known as the old *Friars Balsam*, and is an excellent application for sores, and unhealthy ulcers.

Benzole.—This is a watery carbon, and is obtained from coal tar. It is used to destroy lice, and other insects in the skin of all our domestic animals.

Bismuth, Subnitrate of.

Use. For dogs when affected with vomiting, and purging.

Dose. Five to fifteen grains, given on sugar; may be repeated.

Bole Armenia.—Formerly in great repute among old horse doctors, for many diseases of all the animals, and it entered into almost every mixture. It is useless.

Borax—Or Biborate of Soda. A good application for ringworm, for which purpose dissolve half an ounce of borax in eight ounces of water.

Bromide of Potassium.

Use. For arresting the growth of fibrous tumors so often met with in all animals.

Doses. For horses and cattle, from one to three drachms, and for dogs, five to ten grains, repeated three times in the day, for a considerable period.

Buckthorn.—A syrup is made of the berries, and kept in the drug stores, and is recommended as a mild purgative in dogs having distemper.

Calamine.—An impure carbonate of zinc. Oxide of zinc should be used or substituted for it. Used in the healing of wounds, both in powder and ointment.

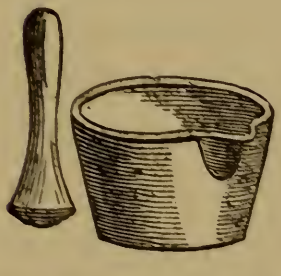
Calcium, or Quicklime.

Use. Lime is used in indigestion and acidity in all animals; in tympanitis in the horse, in hoven in cattle, and in the form of lime-water. Mixed with linseed oil in equal quantities, it makes the celebrated Carron oil, so called from its constant use among the men employed in the Carron Iron Works, when any of them get burnt. Lime-water and calomel make the yellow-wash, and corrosive sublimate, and lime-water, make the black-wash, so highly recommended in unhealthy, and in ill-conditioned ulcers and sores. It is used as a disinfectant in stables and barns.

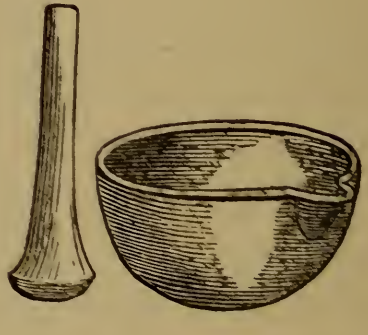
Dose. Quicklime is given to horses and cattle, in from one to two drachms. Lime-water is given in five ounce doses to horses and cattle. For calves with diarrhœa, two ounces of lime water, a drachm of powdered gentian root, and from three to five drops of the tincture of aconite root, given three times a day, is an excellent remedy.

Calomel.—*Chloride of Mercury.*

Calomel should be rarely used in horse and cattle practice, from the fact that animals are not so subject to scrofulous diseases, and liver complaints, as man is, and as these are the diseases chiefly calling for calomel, we can in veterinary practice do without it, so far as *internal* use is concerned. For external application, in the form of the *black* and *yellow*-wash, it is valuable. Calomel sprinkled on unhealthy ulcers and sores is valuable, quickly changing their appearance. Calomel is sometimes used in thrush of the foot of the horse, inserted into the cleft of the frog. In cattle with foul claw, and in sheep with sore feet, it can be used to great advantage. A dog can take as much aloes as will kill a man, but a man can take as much calomel as will kill several dogs.



WEDGEWOOD MORTAR.



WEDGEWOOD MORTAR.

Camphor.—*Use.*—Camphor is a slight stimulant, followed by calmative effect. Hence, it is recommended in cases of irritation, and nervous excitement, and enters into all mixtures used in cases of chronic cough. Three to five grains of camphor, and extract of belladonna five grains, rubbed down in a little whisky or alcohol, and mixed in three ounces of water, is an excellent remedy in allaying irritation in dogs having distemper. An excellent rubifacient can be made with camphor, one ounce; acetic acid,

No. 8, four ounces. To allay irritation in a sore, camphor and sweet oil is a good application.

Doses. Camphor is given to horses and cattle, in from two to four drachms, repeating the dose three or four times a day.

Cantharides.—(See Spanish Fly.)

Capsicum.—(See Pepper.)

Carbolic Acid.—This is the product of coal tar, and was formerly known to the scientific world as phenile or phenic acid, but is now generally known as carbolic acid. Its smell resembles that of creosote, which is carbolic acid and a fixed oil, and is very offensive to most persons. Its form is that of an acid solution, though sometimes sold in crystals. Its great importance is due to its property of coagulating the albumen of the animal tissue, and hence its value in sores, wounds, and ulcers. It may be applied with safety to all parts of the body or legs, and is invaluable for destroying lice, wood ticks, and all forms of parasite life, and by merely washing or moistening those parts of the legs and bodies of horses, cattle, and sheep, and chosen by the bot, horse or other flies to deposit their eggs, their hatching or even deposit may be prevented.

As a disinfectant in stables and buildings affected with fevers and all kinds of distempers, it was found extremely serviceable in England, in checking the ravages of the rinderpest by washing the floors and stalls; and adding a tablespoonful of the solution of the acid to a bucketful of water, in whitewashing the walls and ceilings.

External Use. For sores and wounds, when unhealthy, a good application may be made by adding one drachm of the acid to one pint of water. This will destroy all

putrefaction, and induce the wound to take on a healthy action.

Cardamoms.—The seeds of a plant.

Use. Given to milch cows in case of loss of appetite, and fevers. Generally it is united with fenugreek, ginger, or gentian root, mixed in warm ale, or molasses water. This mixture will cure ephemeral or fevers of a day's duration, when other medicines have failed.

Dose. One to two ounces.

Caraway.—The seeds of a garden plant, and used for the same purposes as the preceding.

Carbonate of Lime.—A chalk which is sold in the drug stores under the name of *creta preparata,* or prepared chalk.

Doses. For horses and cattle, one to two ounces is the dose. For calves, two to three drachms, given in wheat-flour gruel, with a drachm of ginger, or caraway seed, for curing diarrhœa.

Cascarilla.—The bark of a tree.

Use. A bitter tonic, and resembles in some particulars that of quinine.

Doses. For horses and cattle, one to two ounces, mixed in gruel.

Castor-oil.—The expressed oil of the seeds of the *Ricinus Communis.*

Use. However useful castor-oil may be as a purgative in the human family, it is certainly a dangerous poison when given in sufficient quantities to induce purging, in either the horse, cow or sheep. It produces irritation, and inflammation of the coats of the bowels, without relief from purging.

For the dog, castor oil may be a proper and useful purgative; and for the pig, also. Aloes, and linseed oil, is the purgative for the horse; epsom, or glauber salts, for the ox, and the sheep. Whatever suits man, as a purge, will answer for the dog and pig.

Cassia.—*False Cinnamon.* Much cheaper than cinnamon, and may be given to horses and cattle, in powder, mixed in gruel, for loss of appetite.

Dose. One to two ounces, for horses, or cattle.

Catechu.—An extract from a species of *acacia.*

Use. An astringent, binding the bowels in diarrhœa, and is used in combination with chalk and opium.

Dose. For horses and cattle, two to five drachms. For sheep and swine, one to three drachms. For the dog, ten to twenty grains.

For superpurgation in horses, and cows, my favorite combination is as follows: Catechu, two to five drachms; prepared chalk, one to two ounces; powdered opium, ten to thirty grains; mix, and drench with wheat-flour gruel.

Chalk.—(See Carbonate of Lime.)

Chamomile.—The flowers of *anthemis noblis.*

Use. A very mild tonic, possibly too much so for the horse or cow. We have better ones, although, perhaps, not so well known.

Charcoal.—Occasionally given to cows, in chronic diarrhœa.

Dose. Half an ounce to one ounce, given suspended in gruel, of any kind. Externally, charcoal is very valuable, when applied to badly smelling wounds, and ulcers. It immediately corrects the fœtor, and rapidly disposes them

to heal. Charcoal and brewers' yeast are good cleansers of putrid sores, and ulcers, and are worthy of more extensive use.

Chenopodium Anthelminticum.—*Wormseed.* An excellent remedy for worms in dogs. Drop from two to five drops of the oil in a little soup, or give from ten to twenty grains of the bruised seed, for four successive nights, and then follow with a dose of castor-oil.

Chlorine Gas.—Chlorine gas is prepared by pouring hydrochloric acid on the black oxide of manganese, also by heating sulphuric acid with common salt and the manganese.

Use. This gas is a disinfectant, and for this purpose it is made and used as follows: Take an ounce or so (depending upon the size of the place to be disinfected) of black oxide of manganese, and hydrochloric acid of sufficient quantity, carry them to the place where they are to be used, pour the one into the other, and close the doors, having first removed all the animals out of the place. A spirit lamp, placed under the bottom of the vessel holding the materials, will insure a greater volume of gas. (See Disinfectants.)

Chlorine, when sufficiently and properly used, is considered to be of great advantage in arresting the ravages of glanders, farcy, and other distempers in the horse, of pleuro-pneumonia and contagious typhus in cattle, and small-pox in sheep. It is to be hoped that farmers generally will provide themselves with proper apparatus for this purpose. It will not cost above three dollars, and consists of a small lamp with a stand so formed that a small glass bottle, commonly called a Florence flask, can sit right above the blaze of the lamp, while from its wide

and open mouth issues the disease-healing, and health-restoring gas.

Chloric Ether.—Chloroform, dissolved in spirits of wine.

Chloride of Potassium.—Is similar to chloride of soda, or common salt.

Chloride of Lime.

Use. As a disinfectant, from its antiseptic, and deodorizing effects, and is an excellent stimulant to unhealthy ulcers. Chloride of lime has been highly recommended in tympanitis in the horse, and hoven in cattle, arising from eating wet clover.

Dose. From two to four drachms, given, mixed with cold water.

As a disinfectant it may be sprinkled on the stable or barn floor every morning; but a good way would be to suspend it in a box having many small holes in it and hung from the roof of the house. If the house be large, two or more boxes may be used.

Chloroform.—*Terchloride of Formyle.*

Use. Chloroform is an excellent stimulant, when given to horses having a chill, or shivering fit, from congestion, or from cold, and is equal to turpentine, for the cure of colic. An excellent liniment is made, by adding one ounce of chloroform to two of olive oil.

Dose. Chloroform is given to the horse and cow, in doses from one to two drachms, mixed in weak whisky, and repeated every two or three hours, or till the colic is relieved.

Inhalation. The inhalation of chloroform, by either horse, or ox, is attended with risk, provided the animal be not secured, or tied, so that it cannot get loose; because

some horses and cattle become completely wild, when the effects of the inhalation commence to act upon the brain. On the other hand, some horses will quietly stand up, others as quietly will lay down under it.

Two to four ounces are sufficient to produce anasthæsia, or loss of sensibility. The usual way of giving chloroform by inhalation is, by pouring about two ounces of chloroform on a soft and moist sponge, whilst the animal is tied down, and holding the sponge to one nostril only, covering the nose loosely, with a large towel, to save the fumes of the chloroform, using great care not to exclude the admission of pure air with the fumes of the chloroform.

In all operations lasting any length of time, whether in the horse or the cow, humanity and fine feeling demand the outlay for a little chloroform. It is not necessary to *completely* destroy all feeling—just sufficient to blunt the sensibility of the nerve centres.

Cholagogues.—Medicines which increase the flow of bile.

Examples: Calomel, podophyllin, irridin, leptandrin, etc.

Cinchona.—*Peruvian, or Jesuit Bark.* There are several barks of cinchona, used in medicine, and from which the sulphate of quinine is made. Cinchona, or its barks, are not used in horse and cattle diseases.

Quinine is the only preparation used; but its high price is against its general use, in veterinary practice. Among valuable horses, it is frequently used to hasten recovery from influenza, lung fever, etc.

Dose. Twenty to forty grains, repeated from three to four times a day.

Quinine is apt to be adulterated with *arsenic*, as proved to be the case with many samples used during the late war.

Cochineal.—An insect used as a dye for coloring tinctures and other medicines for the purpose of deception. Druggists color water with it, for filling the show bottles usually found in their store windows.

Cod Liver Oil.—In all animals, cod liver oil increases fat and flesh. In diseases affecting digestion and assimilation cod liver oil can be of no use. It materially relieves broken wind or heaves in horses. For hastening, or forcing animals intended for show, cod liver oil is just what is wanted, as it not only hastens the fattening process, but increases the quality and appearance of the meat.

Dose. For swine, two ounces daily. For small pigs, one ounce.

Colchicum.—*Meadow Saffron.* The seeds and root are the parts usually employed in medicine, sometimes in powder; but the best is in the form of tincture.

Use. Given in all rheumatic affections of the joints, and in lumbago, and also in diseases of the eye of the horse, depending on rheumatism of that organ.

Dose. Of the crom or seeds in powder for horses and cattle, the dose is from one to two drachms, given in the animal's feed twice in the day, for a week or two. The wine of colchicum will answer for the dog, in from five to fifteen drop doses, twice a day in a little water.

Collodion.—This is a solution of gun-cotton.

Use. Collodion is used for dressing wounds and cuts, instead of sticking plaster, and is applied in the following manner: Clip the hair from the edges of the wound, take a camel's hair pencil, or a soft brush, and paint the surface and edges of the wound well, and in a few minutes, the ether, which holds the gun-cotton in solution, evaporates, leaving over the sore a complete covering, resembling the

gold-beater's skin, thus completely shielding the sore from the action of the air. Hence, its value.

Copper, Sulphate of.—*Blue Vitriol.* This is one of the most useful articles that can be used in horse and cattle diseases, both internally and externally. *Internally* used, sulphate of copper is a powerful tonic and builder up of the system, and is recommended in all diseases characterized by a low state of the system. Farcy, glanders, purpura, etc., in the horse, have, in several cases, yielded to its effects. Sulphate of copper should never be given alone, but should be combined with gentian or ginger. After the fever has passed off in cases of pleuro-pneumonia, the sulphate of copper is an excellent medicine to support the vital powers, and prevent effusions in the chest, which is the cause of death, in most cases, from this disease.

Dose. In horses and cattle, one to three drachms are the proper doses, given twice in the day.

The *external* use of the sulphate of copper is often called for as a caustic in wounds and sores growing proud flesh, which are readily controlled by it, simply by touching the parts with a piece of the crystal in powder, or in solution.

For diseases of the eye, I think it has no superior. For this purpose, use three grains of the powdered sulphate to an ounce of rain water, and apply with a soft feather, or what is better, a camel's hair pencil.

For wounds which have no proud flesh in them, eight to ten grains to the ounce of water is a good and cheap application.

COPPER, ACETATE OF.—This is used only for sores in the form of an ointment. Take of the acetate or verdigris

one drachm, and add to it an ounce of the simple ointment. I have known sores to heal from its use, which have bid defiance to almost every other application.

Coriander.—*The Seeds.* This is a useful article, and may be considered an excellent medicine for young calves having weak stomachs. The bruised seeds should be given, in two drachm doses, in the milk which is given to the calf.

Creosote.—This is a peculiar smelling fluid derived from tar. Creosote has had the credit of curing glanders in man, and is a good remedy in pleuro-pneumonia in cattle, but we have better ones, and not so costly. Cases of farcy and glanders in the horse are greatly benefited by its use.

Dose. For horses and cattle, use from one to one and a half drachms, made into a mass, with flour and molasses, and the whole crumbled down into some gruel. Make a drench, to be poured down the throat.

As an external remedy, it is of great advantage in mange, sores, ulcers, caries of the bones, canker, thrush in the horse's feet, and the foot-rot so troublesome in sheep. Indeed, the more the virtues of creosote are known to farmers, raisers and breeders of stock, the more will it be valued and the greater will be the advantages derived from it. (See Prescriptions.)

Croton Oil.—A dangerous medicine when improperly used, but a useful one nevertheless, when hasty action of the bowels is wanted, as in milk fever in cows.

Dose. For the cow ten to fifteen drops, given along with epsom or glauber salts.

Digitalis.—*Digitalis Purpura.* The action of this powerful medicine has been much sought for as a sedative

in lung diseases; but since we have become acquainted with the superior qualities of aconite, digitalis is not now worth keeping in the veterinary *Materia Medica.* Moreover, digitalis is a dangerous medicine, from the fact that it accumulates in the system, for a time, and all at once, its effect is manifested in the weak action of the heart, so that in many cases, the heart ceases to beat altogether.

Doses. For horses and cattle, twenty grains of the powdered leaves.

Disinfectants.—I have, in two portions of this book, referred to the importance of a better acquaintance on the part of farmers and stock raisers with this subject.

Volatile Disinfectants may be divided as follows:

1. *Chlorine.*
2. *Nitrous acid fumes.*
3. *Sulphurous acid.*

These diffuse themselves through the air of stables and barns, and neutralize the poisonous gases which are given off from the excrement of animals, whether in health or disease.

Fixed Disinfectants.—These are such as can be mixed with the *excreta* and decaying matter, without destroying them for manure.

1. *Perchloride of iron.*
2. *Permanganate of potash.*
3. *Gypsum—Sulphate of lime.* This is not a great one, but it is useful.
4. *Charcoal.* This, in fine powder, should be thrown into damp stables and barn-yards, as it will not only remove unpleasant smells, but will make good manure. Refuse tan bark, and other vegetable substances, made into charcoal, is cheap, and of great utility as a disinfectant, and adds to the quantity and value of the manure.

FIXED, BUT NOXIOUS DISINFECTANTS.—These are disinfectants which, when mixed with manure, render it valueless as such.

1. *Chloride of Zinc.* (Burnet's Disinfectant Fluid.)
2. *Nitrate of Lead.* (Ledoyer's Disinfectant.)
3. *Sulphate of Copper, and Zinc Solution.* (Larnaudes.)

Chlorinated Soda Solution may be mixed with manure, without destroying its qualities as such.

Chloride of Lime. Solid, or in powder, does not destroy the manuring qualities of vegetal, and other materials usually converted into manures.

Diuretics.—Medicines, which, when given to animals, increase the flow of urine. They are used in cases of swellings and dropsies of the body and legs of horses.

Elecampane.—*Inula Helenium.* The root of this plant is highly thought of, and much used, by horsemen, in coughs and colds. Some make a tea of it, or decoction, and give it to the horse to drink. It is certainly a warm and grateful aromatic, and a good expectorant. The plant should be gathered when the seed is ripening.

Elm Bark.—*Slippery.* This bark, when scalded with hot water, makes a useful poultice for irritable wounds, ulcers, and sores. A decoction of the bark will answer every purpose for which flaxseed, or linseed is used, or recommended, as in diseases of the kidneys, and bladder, produced by the use of Spanish fly, and from over-dosing with rosin, and other diuretics. In diarrhœa, in all animals, slippery elm tea, or decoction, will serve a good purpose, by sheathing the covering of the bowels, which is so apt to become irritated and inflamed in violent superpurgation.

Emetics.—Medicines which produce vomiting. Horses, cattle, and sheep cannot vomit, whilst the stomach remains entire. In cases of rupture of that viscus, however, vomiting is occasionally seen. Emetics are useful in diseases of the dog, and swine. Tartar emetic, or sulphate of zinc, given in from two to five grain doses, will cause dogs and swine to vomit.

Epsom Salts.—*Sulphate of Magnesia.* This is a valuable medicine, in diseases of cattle and sheep. No other purgative should ever be thought of, or given to either cattle or sheep. Even supposing other purgatives to be as good, none, certainly, can be so cheap, as epsom and glauber salts, or the sulphate of soda. For all purgative purposes, the one is as good as the other. Salts should be largely diluted with water; for the quantity of fluid given with them, facilitates their operation. In domestic practice, half an ounce of salts, in one tumbler full of water, will operate as strongly as one ounce, in half the quantity of water.

Doses. For ordinary sized cows, one to two pounds is the dose, mixed with four quarts of cold water; one ounce of ginger in powder, and the whole sweetened with molasses, or coarse sugar. For average sized calves, two to four ounces; for sheep, four to six ounces. A few drops of commercial sulphuric acid—say twenty to sixty drops, will greatly remove the nauseous taste.

Ergot.—*Diseased Rye.* This is a curious, as well as a valuable medicine.

Use. In the calving, lambing, and foaling season, it is sometimes of great service, but should be carefully handled; as, for instance, if given to any animal about to deliver her young, and when the mouth of the womb containing the

young is not sufficiently opened, the administration of this remedy would be attended with extreme danger, as the womb, by the powerful contraction set up, caused by the ergot to expel its contents, would likely be ruptured, or torn, followed by the death of the animal. When the animal seems to have exhausted its strength, and the passage is open, and the young is coming in a natural way, then only should the ergot be given. If there should be a malformation in the young, or in the pelvis of the mother, it would be equally unwise to give ergot.

Doses. For a mare, or cow, half to one ounce of the powder is the dose. For sheep, swine, and large sized bitches, one drachm is the dose. Small bitches, ten to thirty grains.

Essential Oils.—*Volatile Oils.*—(See Oils.)

Ether.—*Sulphuric Ether.* This is a valuable article of the veterinary *materia medica*, and is used in diseases of all the animals.

Use. It is used as a stimulant, and is given in weakness, fevers, and in colic, as an antispasmodic. Ether is scarcely strong enough to produce anasthæsia in horses and cattle.

Dose. For horses and cattle, one to two ounces is the dose as a stimulant, and antispasmodic. Ether should be given in cold water, to prevent its volatilization on its exposure to the air. Twice its own volume of alcohol added to it makes the spirit of sulphuric ether.

Euphorbium.—*A resinous juice*, expressed from a cactus-like vegetable which grows in Morocco.

Use. This is only used for external purposes, and is among the very few articles in veterinary medicines capable of blistering the thick skin of the ox.

Expectorants.—This is a class of useful medicines, which cause a separation of the mucus from the throat, and air passages, thereby relieving cough and other symptoms usually attendant upon throat diseases.

Febrifuges.—Medicines capable of relieving fever.

Fenugreek.—The seeds of this annual plant, found growing in the south of Europe, is a useful cattle medicine, given in one ounce doses, for loss of appetite, ephemeral fevers, etc. It is usually, however, combined with ginger, gentian, and other medicines of that class.

Fern.—*The Male—Aspidium Felix Mas.*

Use. Given to animals affected with worms. A good remedy.

Doses. For the horse, one pound of the root in powder is the dose. For sheep, three to five ounces. For the dog, with tape worm, it is invaluable, destroying the worm in two hours. A purgative should be given next day.

Friar's Balsam.—This is the compound tincture of benzoin, and is an excellent article when applied to sores and wounds, as the fluid soon evaporates, and leaves a resinous covering over the wound, thus shielding it from the action of the air. (See Benzoin.)

Galbanum.—A dried juice, having medicinal properties similar to asafœtida.

Galls.—*Nut Galls.* These are rough excrescences on oak trees resulting from holes being made in the bark by an insect.

Use. A powerful astringent, binding the bowels of all animals affected with dysentery and diarrhœa. Also a good application to the greasy heels of horses.

Doses. For horses and cattle, powdered galls are given

in from four to six drachms. For sheep and swine, thirty to sixty grains. When externally applied the powdered nut may be sprinkled on the sore.

Gallic Acid.—(See Tannin.)

Gamboge.—This is a gum resin from a tree growing in the Island of Ceylon.

Use. A useful purgative for cattle. (See Epsom Salts.)

Doses. For cattle, six to eight drachms is the dose. For sheep, thirty grains, given in solution; should be given with other medicines of the same class.

Gentian Root.—*Gentiana Lutea.* This is an invaluable medicine in the treatment of diseases of horses and cattle, where the appetite is to be restored and kept up. In debility, weakness, swellings of the legs and body, and where the stomach is out of order, as is the case so often in fevers, and as a sequel to debilitating diseases, gentian, combined with iron, is an excellent tonic, and cheap. Gentian, combined with ammonia and pimenta berries, will make a horse eat almost whether he will or not.

Doses. For horses and cattle, half to one ounce is the dose, repeating it three times in the day. For sheep, one drachm. For dogs, five to ten grains. For horses and cattle, it is best given mixed in gruel, and in a drench out of a strong necked bottle. Gentian root should enter into all condition powders.

The colleges order a *tincture* to be made, but the powder is all that is wanted in the treatment of horse and cattle diseases.

Ginger.—*Zingiberis.* A well known root, and a useful article to have in the house.

Use. Ginger is given in cases of gripes, or colic, whether in horses or cattle, and should enter every dose

of purgative medicine given to all the animals. Ginger is useful in loss of appetite in horses, and in calves is an excellent medicine to give with chalk, and other things, in scours, or diarrhœa.

Doses. For horses and cattle, one to two ounces is the dose; for sheep, two drachms; for calves of three months old, one drachm, and for younger ones less. The essence of ginger, of the drug shops, is well adapted to use, as the active principle of the ginger is given without so much inert or dead matter.

Glauber's Salts.—*Sulphate of Soda.* A good purgative for cattle and sheep. (See Epsom Salts.)

Glycerine.—A fluid which scarcely ever dries up, and is the saccharine principle of fats. Bower's glycerine is the best in the American market, and is inodorous, or without smell, which is the best indication of its purity.

Use. Many sores on all animals readily heal by the application of glycerine, especially scratches, and sores about the heels of horses. Glycerine will be found invaluable for the use of companies, in all our cities, having horse railroads, where the authorities allow the use of salt on the streets, for the removal of snow. The slush so formed first chills, then scalds the skin of the heels, so that in a short time the skin cracks, and nasty sores are the result, which are difficult to cure. To prevent this condition of things, and to protect the heels of horses from the injurious effects of the salt and slush, the application of glycerine should be made to the heels morning and mid-day, whilst the salt, slush and snow are upon the streets.

Guaiacum.—This is a resin.

TINCTURE OF GUAIACUM.—A valuable medicine in

cases of rheumatism in old horses, and in rheumatic lameness in dogs.

Dose. For horses, the dose of the tincture will be half an ounce twice in the day, given in cut feed, or in a drench with cold water. For dogs, ten to twenty drops, given in a spoonful of cold water or soup.

Gum Arabic.—*Gum Acacia.* This is an importation from Alexandria, in Egypt. There are several varieties of gum.

Gum Senegal.—This is similar to the above.

Gum Tragacanth.—This is another variety of gum.

Use. The gums are demulcents, emollient and soothing to an inflamed part, as the bowels in diarrhœa, the kidneys and bladder, when diseased and irritated.

Doses. For horses and cattle, from one to two ounces. For calves and sheep, four drachms. Gum should be given, dissolved in warm water, and drenched out of a bottle or ox horn.

Hartshorn.—This is an impure solution of ammonia. (See Ammonia.)

Hellebore.—*Hellebrosus Niger.*

Use. Recommended in poll-evil, wherein a piece of the root is to be inserted in the fistulous opening. No dependence should be placed in it. Better agents are at hand.

Hemlock.—*Conium Maculatum.* Formerly recommended in inflammation. It is of benefit in the form of a poultice to cancerous sores.

Hemp, Indian.—*Cannabis Indica.* The colleges order a tincture and an extract. In the east of Europe, the resin of the plant is known as *churrus*, and its preparations are known as *gunjoli*, *bang* and *hachish*. According to

the accounts which have reached us, in regard to the use of this article, no such action can be produced upon man from any preparation of the hemp in use in America, as is represented to be produced amongst the subjects of His Majesty, the Sultan of Turkey. The genuine preparations of Indian Hemp produce in man great excitement, high spirits, great laughter, talkativeness, pleasing thoughts, and a great appetite for food and sexual excitement, followed by sleep, from which the person recovers without any unpleasant effects. Experiments instituted by the writer with this medicine upon horses, do not warrant its introduction into the list of horse and cattle medicines.

Henbane.—*Hyoscyamus Niger.* An extract and a tincture is ordered to be kept in the drug stores. Hyoscyamus is indicated in all cases where belladonna is used. It has, however, little effect upon animals chewing the cud. To horses, it is occasionally given to relieve cough and irritation of the throat or windpipe.

Dose. For horses, one to two drachms of the extract is the dose, which should be given, rubbed down in a little cold water, and repeated several times in the day. Better drugs, and less expensive ones, answer a better purpose. This medicine was formerly relied upon for the cure of insane persons, but is now almost discarded for that purpose.

Iodine.—A chemical preparation manufactured from kelp or sea-weed and used both rightfully and wrongfully in many diseases. However, iodine itself is, I think, of little value as a medicine; but when united chemically with iron, copper, mercury, lead, arsenic and potassium, it certainly is one of the most useful and indispensable of medical agents, given internally, and applied externally.

Dose. Iodine is given to the horse and the ox in from twenty to forty grains; for dogs, use from three to six grains. An ointment of iodine is made as follows: Take one part of iodine to eight parts of lard. This is a good ointment to apply to soft swellings on the body of the horse, and should be applied by rubbing with the hand.

Iodide of Potassium.—*Hydriodate of Potash.* This is a chemical union of potash with iodine, a costly remedy for horse and cattle diseases, and in most cases can be done very well without. Its action is that of an absorbent, and it is, therefore, used in swelling of the glands, and other parts of the body. To get its full benefit, it should be given in syrup or molasses, so that the iodine will not be lost, leaving the water only behind.

Dose. From twenty to thirty grains for horses and cattle, repeated three times in the day. For the dog, five grains.

(1.) IODIDE OF ARSENIC.—Highly recommended by some persons for glanders, farcy and purpura in the horse.

Dose. Five grains given once a day, in cut or mixed feed.

(2.) IODIDE OF COPPER.—A valuable remedy, but costly. It should be used only for valuable horses, in cases of debility and loss of condition, mingled with cut or mixed feed.

Dose. From one to two drachms, given twice or three times in the day.

(3.) IODIDE OF IRON.—This is even more valuable than that of the iodide of copper, and is given for the same purpose, and in the same doses. To use the iodide of iron once, will insure its use again. Its high price is the only drawback. Iodide of iron enters into the powders and

balls which are given to the English race horses, whilst in the trainer's hands;—a high recommendation.

(4.) IODIDE OF SULPHUR.—A valuable remedy in mange, and other skin diseases, which may be given internally also, in the same disease.

Dose. For horses, give two to four drachms in the animal's feed. For mangy dogs, give ten to fifteen grains once a day. Give it at night, as warmth assists its action very much.

(5.) IODIDE OF LEAD.—Too weak for veterinary practice, but excellent for swellings on the body of man. It is only used externally. Iodide of lead is of a beautiful yellow color.

(6.) IODIDE OF MERCURY.—*Bin-Iodide of Mercury—Red Iodide of Mercury, etc.* This preparation of iodine is a medicine that the educated veterinary surgeon cannot do without in the practice of his profession; for there is nothing which will so well meet his wants. Iodide of mercury is not used internally, in any disease, as calomel contains the same internal action as that of the iodide.

Use. It is used in all cases of induration and swelling of the glands of the neck; tumors, whether of bone or soft tissue; splints, spavins, ring-bones, wind-galls, shoulder-joint lameness, or thoroughpin, and will answer well for an ordinary blister, for whatever purpose. The only objection to it, as a blister over an extensive surface, is its painful operation.

The iodide of mercury is used as an ointment as follows: One part of the red iodide of mercury to eight parts of hog's lard, well mixed together. This ointment is to be well rubbed into the parts to be cured; swelling will follow its action, but will subside in a few days, if one application be enough—which will be known, if the

enlargement has been broken or has disappeared. If not, apply in from five to six days again, scarcely rubbing so hard as at the first application, as the skin is more easily acted upon at this time. But whether one, two, or half a dozen applications be necessary, let sufficient time elapse before each succeeding application, so as not to prevent the hair growing, thereby blemishing the part. Apply lard once a day between each application, and occasionally wash the parts with water, not too warm, and lard, or oil the part when dry. The horse's head should be tied up, so that he cannot get at the parts with his mouth. A few hours will be long enough. Place plenty of soft bedding under the feet, so that, by stamping, the horse will not break or hurt his feet.

Observe. When, apparently, the tumor, gland, or other enlargement, does not disappear, or go away at once, surprise is sometimes expressed to see it totally go away, as if of its own accord. Thus the red iodide of mercury exercises a powerful influence, long after its use has been dispensed with. Iodide of mercury, occupies, in my estimation, in external diseases, as prominent a position as the preparations of aconite do in internal affections, whether in horses or cattle.

Several other preparations of iodine are made by the manufacturing chemists; such as the iodide of gold, and silver—which are of no use in horse and cattle diseases.

Ipecacuanha.—*Cephaelis Ipecacuanha.* In veterinary practice, ipecacuanha is only used for dogs, in fifteen to thirty grains, as an emetic, when first attacked with distemper.

Iron.—*Ferrum.* This is one of the most valuable medicines we have to recommend, in many of the most

important diseases, of all the animals; a fact readily seen, when it is stated that iron is a constituent of the blood of all warm-blooded animals, and without iron being in proper quantity in the blood of an animal, it cannot be healthy—is *anæmic*, or impoverished in blood. In fact, iron is an elementary principle, essential to health.

Metallic iron is rarely used in veterinary practice, except it be in the form of iron filings, given by some persons, in cases of worms in horses. The sulphate is just as good for this purpose. Iron filings, called *Ferrum Redactum*, are much used in the weakly and sickly female. To prevent the filings from oxidizing, or rusting, they are put into a tube, similar to a gun barrel, at a strong heat, and are then plunged into cold water, which give them a sky-blue color; the finer the blue, the better the medicine. For the valuable dog, iron filings, in this form, may be given, in from five to ten grain doses. The following preparations of iron will be used for the horse and ox:

(1.) CARBONATE OF IRON.—*Ferri Carbonas.* This preparation of iron is only used in veterinary practice, for the dog, on account of its mildness.

(2.) SESQUIOXIDE OF IRON.—*Rust of Iron—Ferugo.* This form of iron is only used by veterinary surgeons, in poisoning from arsenic, as an antidote, by forming in the stomach an insoluble arsenite of the protoxide of iron.

(3.) SULPHATE OF IRON.—*Ferri Sulphas—Green Vitriol-Copperas.* This is one of the best, and cheapest preparations of this valuable metal, that can be used in diseases of horses and cattle.

Use. In medicinal doses the sulphate of iron is tonic and astringent; therefore, it is used in cases of weakness, want of condition, looseness of the bowels, swellings of the legs, body, sheath, breast, etc. It is improving, adding

richness to the blood, and giving tonicity and health to the fibrous, serous tissue, from which the fluid causing the swelling arises. In pleuro-pneumonia in cattle, after fever has abated, nothing will restore and prevent effusions of serum, or fluid, in the chest, like sulphate of iron; and effusions in the chest of cows, and neat cattle, is the cause of very many deaths. The effusions form connecting links between the lungs and the sides, from which adhesions take place in that disease, and from which the animal can never be restored to good health, although it may live for a year or two. How important, then, is a medicine offering so much hope!

In addition to the diseases just named, sulphate of iron is the medicine to be used in all cases where the powers of life are low and depressed. In red water in cattle, bleeding internally in all animals, dysentery, purpura, scarlatina, and in debilitating diseases generally, no medicine offers so much as the sulphate of iron.

Observe. Sulphate of iron should not be given while inflammation and fever lasts; it is time enough to give it after all irritation has subsided. It should always be combined with a vegetable tonic, such as gentian, or ginger. Iron changes the dung to a green color, as if the animal was at pasture.

Doses. For horses and cattle, the dose is two to three drachms, with the same quantity of powdered gentian, two to three times in the day, to be given, mixed in a quantity of cold water. Drench out of a bottle, if the animal does not eat it readily, mixed with cut, or soft feed.

(4.) Perchloride of Iron.—Whether in a fluid or solid state, this preparation is valuable for bleeding wounds, to stop the flow of blood—which it will readily do, if properly applied, and the blood vessel that is wounded is

not too large. It should be applied with a soft brush, or a pledget of soft cloth or cotton dipped in it and laid over the wound, and kept bandaged. Perchloride of iron should be kept in every farm, or country house, for this purpose. It should be kept in a glass-stoppered bottle to keep it pure.

Jalap.—*Convulvulus Jalapæ.* This root derives its name from a town in Mexico, called Xalapa, and grows fully six thousand feet above the sea level. It is, in veterinary practice, used only as a purge for the dog, in from twenty to sixty grains.

Juniper Berries.—*Juniperis Communis—The Fruit.* This medicine is valuable in horse and cattle diseases, as a stimulant to the stomach in loss of appetite, and in convalescence from debilitating diseases.

Dose. For horses and cattle, one to two ounces is a dose. Dogs, twenty to forty grains.

Kino.—A juice of several plants. This is used as an astringent in diarrhœa in all animals, and is considered more powerful than catechu, (which see.)

Kousso.—The flowers of this plant are brought from Abyssinia.

Use. To expel, or destroy tape-worm in man, and the dog, and is prepared and used in the following manner: Take of kousso half an ounce, of warm water half a pint, let it stand till cool, and give it, flowers and all; and give next day a dose of castor-oil.

Laudanum.—(See Opium.)

Laxative.—A mild purge.

Lead.—*Plumbum.* Metallic lead in the form of shot, is used by our horse dealers, to relieve temporarily the

heaving, or symptoms of broken wind, or heaves in horses. It will be needless for me to say, that if the lead is not speedily converted into an insoluble oxide, the animals so treated will die in a month or two. (See Lead Poisoning.)

(1.) Oxide of Lead.—This preparation of lead is used in the manufacture of common sticking plaster, or Diachylon.

(2.) Iodide of Lead.—(See Iodine.)

(3.) Acetate of Lead.—*Sugar of Lead.* Solution of acetate of lead is known by the name of Goulard's Extract of Lead, and was formerly, and is still by some persons recommended, and used in cases of sprains, and as a wash for diseased eyes. Better and less injurious agents are now used by the educated veterinary surgeon.

Observe. Goulard's Extract, or lead-water, should never be used in diseases of the eye, as it can do no good beyond what cold water can do, but it dulls the eye, by making it hazy and opaque. It will be well to remember this, and act upon it, not minding what old and antiquated books and individuals may say or think in regard to what is here recommended.

Lime.—*Oxide of Calcium.*

Lime, Carbonate of.—(See Chalk.)

Linseed.—*Linum Usitatissimum.* Ground flaxseed makes the best poultice, as it is less irritable and retains its moisture better than most articles in use for that purpose.

Cake Meal.—That portion which is kept after the oil has been expressed from the seed, is a good feed for horses and cows, given occasionally, and makes a good and much cheaper poultice than the most costly seed.

Linseed Oil.—*Oleum Lini.* This is a good and *safe* purgative for the horse, and should be given by farmers and non-professional persons in preference to any other article. The English veterinary surgeons use linseed oil for colic in the horse, in the following combination: Linseed oil, one pint, and two ounces each of oil of turpentine and laudanum. In cases of choking, in either horses or cattle, a half pint of linseed oil should be poured down the throat, so that by its emollient properties the substance may pass readily down the gullet.

Doses. For horses, one to two pints is the dose used for a purgative. For scalds and burns, linseed oil is mixed with lime-water. (See Lime-water.)

Liquorice Root.—*Glycyrrhiza Radix.* This was formerly in use for making balls for horses, but it is now superseded by molasses.

Lobelia Inflata.—*Indian Tobacco.* This medicine is in great use by the eclectic physicians in the United States as an emetic, which fact, I believe, has induced Dr. Dadd to recommend it to veterinary surgeons and horsemen of this country. Does the Doctor not yet know that the horse, the ox and the sheep, cannot vomit? Therefore, it is not entitled to a position, for such purpose, in the veterinary *Materia Medica.*

Logwood.—*Hœmatoxylon Campechianum.* This is a valuable medicine not well known, and consequently not appreciated.

Use. One of the very best astringents for binding the bowels in diarrhœa and dysentery, in all animals, and especially when accompanied with irritation of the bowels. Logwood is cheap, sold in chips, and is prepared and given in the following manner:

Logwood chips, two ounces; boiling water, one pint. Allow it to stand till cold, then strain through cloth, or a fine sieve.

Dose. For horses and cows, this quantity will make one dose. For calves with scours, one to three ounces will be the dose, which repeat if the case demands it. A safe remedy, and cheap.

Lunar Caustic.—(See Silver.)

Lupuline.—*The Hop.* Makes a good poultice, applied to the udders of cows, when lumpy and hard. It hastens the suppurative process.

Lytta-Cantharides.—(See Spanish Fly.)

Magnesia.—*Oxide of Magnesium.* Used sometimes in young foals and calves, when they have no appetite. A good antidote for arsenical poisoning.

Dose. For these animals, two drachms to six is the dose. A little ginger should be added to it to prevent griping.

(1.) Carbonate of Magnesia.—*Magnesia Alba.* The action of this is similar to the preceding.

(2.) Sulphate of Magnesia.—(See Epsom Salts.)

Manganese.—A metal used as a disinfectant, in combination with some one of the mineral acids. For the way to use it, see Disinfectants.

Marsh Mallow.—*The Root of Althea Officinalis.* Used in the form of an ointment, but not of much utility. It, however, still holds a place in horse and cattle medicines. It can be done without.

Marigold.—*Calendula Officinalis.* A garden plant.

Tincture of Marigold.—This is a good application to

sores, ulcers, and abscesses, and is applied with soft cloths, saturated or moistened with it, and laid over the affected part. It is a new remedy in burns and scalds.

Mercury.—A liquid metal called *quicksilver*. In its metallic state it is not used as a medicine. There, however, is a prevalent idea in the minds of ignorant persons that doctors and veterinary surgeons give this substance to force a passage through the bowels, and that if it fails the bowels and stomach will be ruptured or torn. If the patient should die, the blame is not unfrequently laid on the use of quicksilver by the doctor, when this substance was never thought of for any such purpose. Quicksilver has no action whatever on the animal system, either in health or sickness.

(1.) MERCURY WITH CHALK.—*Gray Powder.* Used in diarrhœa in calves, in doses from ten to fifteen grains, given with a little ginger, and mixed with wheat-flour gruel.

(2.) IODIDE OF MERCURY.—(See Iodine.)

(3.) BI-CHLORIDE OF MERCURY.—*Corrosive Sublimate.* A dangerous poison, and should never be given to any animal. It is, however, used in solution, in some skin diseases, as in ring-worm and mange. When so used, only a small portion of the body should be washed with it in one day. For this purpose, take four grains of the sublimate to two ounces of rain water. For a dog, two grains to the ounce, in water, will be strong enough.

(4.) NITRATE OF MERCURY.—*Ointment.* This is the citron or golden ointment, and is a good remedy in ring-worm. Unfortunately, however, it spoils with long keeping, and not being made extemporaneously, it is often rancid and of little value.

(5.) Oxide of Mercury.—*Red Precipitate.* Used in the treatment of unhealthy ulcers and sores, in the form of powder and ointment. It is the principle in the yellow-wash already spoken of in connection with the subject of lime. (Which see.)

(6.) Sulphate of Mercury.—*Turbith Mineral.* A medicine of no use, which should be expunged from the books on horse and cattle diseases.

(7.) Sub-Chloride of Mercury.—*Calomel.* A medicine I never use, and will not recommend for *internal* administration. In the form of the black-wash, and sprinkled upon sores, it is a good remedy. Calomel is recommended for thrush in the feet of horses, and is inserted in the cleft of the frog.

Mercurial Ointment.—This is sold in the drug stores. The ointment of mercury is chiefly used in skin diseases, as mange in horses and dogs. But a better remedy will be found in sulphur, and its preparations, which are not only more safe, but more certain of curing the case.

Mezeron.—*Daphne Mezerum.* A plant, from the bark of which an extract is made, and from the extract an ointment composed of one drachm to four parts of lard, which is used for the purpose of keeping up the irritation of blisters.

Morphia.—(See Opium.)

Muriatic Acid.—(See Acids.)

Mustard Seed.—*Sinapis Nigra.* Used as an irritant on parts of the body, where the Spanish fly would be improper and dangerous. On the belly, and over the loins are the usual places where mustard is applied. In lumbago, and sprains of the back and loins, and in pain in

the bowels, mustard is useful. The mode of application of mustard is as follows: If the hair of the part be long, cut it off, then foment the part with warm water, and immediately rub into the parts a handful of the best flour of mustard. This is more effectual than laying a paste or poultice without rubbing.

Volatile Oil of mustard makes a good counter-irritant, when a few drops are rubbed into the skin. Vinegar added to mustard does not, as is thought, produce a better effect. Warm water answers every purpose.

Myrrh.—A gum resin, used in the form of a tincture and a compound tincture, for sores, and a good application in sore mouth, from the bit, or other cause.

Narcotics are medicines which act upon the brain, and thereby allay pain. Example: Opium and its preparations, aconite and chloroform.

Neat's Foot Oil.—Used for skin diseases, and for allaying the irritation of blisters and keeping the skin from cracking.

Nervines.—Medicines relieving pain, without producing narcotism.

Nitric Acid.—(See Acids.)

Nitre.—*Saltpetre.* This medicine has long been used as a diuretic, and as a febrifuge in low fevers. Cheaper and better medicines are daily in use for this purpose. Nitre is not a cheap medicine, nor yet is it an indispensable one. The days are past when *emetic, tartar, nitre,* and *digitalis* were the remedies used in cases of inflammation, irritation and fever. This formula has in its day deceived many a man, and has been the means whereby many thousands of valuable animals have been lost. Wherever nitre

is indicated, I use the sulphite of soda, and have no cause to regret the change. A bundle of fresh cut grass given to a horse, will have a better, and more soothing effect than nitre. Instead of being given in any disease, nitre should be left to fulfil its destiny in the making of gunpowder to liberate the toiling millions of other lands from the hands of the despot and the oppressor.

Nux Vomica.—*Strychnos Nux Vomica.* An active poison in large doses, but a valuable agent in the cure of diseases in all animals. The powdered nut is uncertain in its effects, therefore the *tincture*, and the *alkaloid* should only be used.

Use. A nervine, and used when the nerves are depressed and weak, just as aconite is used when the nerves are strong and excited. The one medicine is used in depression, and the other in diseases with exalted symptoms. Paralysis or palsy is the loss of power in the motor nerves of the part affected. Therefore, nux vomica is used in twitching of the muscles of all animals; and in glass eye in the horse, depending upon the want of nervous energy in the optic, or nerve of vision.

TINCTURE.—*Dose.* For horses and cattle, the dose is from ten to twenty drops, repeated three to four times in the day.

STRYCHNINE.—*Dose.* To horses and cattle, give one grain, once a day, gradually increasing the dose till three grains are given in the day. To get the full benefit from it, it will have to be given for a week or two, if the beast has not got well by that time. In the use of strychnine, care and good judgment must be exercised, for it must be remembered that however useful a drug, or medicine may be, its abuse is readily accomplished. Strychnine should

be administered in feed, if the animal will eat it; if not, give it in gruel in the form of a drench. Twelve grains is the dose required to kill a full grown horse.

Arsenite of Strychnia is recommended by the French veterinary surgeons, in *nasal* discharges, but with what effect is not stated. If it does not cure, as I suppose it does not, it only serves to show to my mind how utterly ignorant veterinary surgeons are in regard to the true pathology of these discharges, supposed to be glanders. Mr. Gamgee, on the International Veterinary Congress, held at Hamburg, says, "when the subject of glanders was mentioned, no one responded." Why? certainly not that they knew all about it. No, the contrary is the case, for they knew nothing at all about its nature, and hence we have the French using a drug the least of all likely to change, arrest, or cure the disease. Prussian blue is said to contain ten per cent. of strychnia; some packages contain as high as sixty grains.

Oak Bark.—*Quercus Cortex.* This is a good astringent for outward use, or for sores which discharge or run matter. The bark is boiled: half an ounce to a pint of water. This decoction is an excellent remedy for drying up the moisture of greasy heels, so troublesome in horses. In diarrhœa in calves, given in four drachm doses, much good will result.

Oils.—There are two varieties of oils used in medicine —fixed and volatile.

Fixed Oils.—Castor, olive, linseed, croton and neats'-foot oil. The uses of these oils will be found treated of under their respective heads.

Opium.—*Papaver Somniferum.* The dried juice of the white poppy, and is one of the most remarkable substances

in nature. There are several varieties of opium: Turkey, Egyptian, East Indian, Persian, and European opium. The medical preparations of opium are several:

Morphia, or *morphine*, is the most important preparation of opium, and sold in the drug stores in the form of white crystals, as also in that of a liquid—liquor morphia acetas, and liquor morphia sulphas. Either of these preparations of opium are much better medicines than the crude opium itself. Each fluid ounce contains *one* grain of the morphine, or the true principle of the opium, and one grain of morphine is equal to three grains of opium, or to forty-five drops of the tincture of opium, commonly called laudanum.

Use. Opium is a narcotic, or reliever of pain, and is especially recommended in milk fever in cows.

Dose. The dose of the acetate, sulphate, or muriate, in crystals, for the horse, is from twenty to forty grains. For the cow with milk fever, from forty to eighty grains. To a medical man, such large doses may seem enormous, for in man the dose is from half to one grain.

Horses will scarcely show the least effects from the administration of from two to four drachms of the powdered opium. On cattle, opium has even much less power than on horses. Cows can take one ounce, and sheep half a drachm of powdered opium, without suffering. The doses of crude, or powdered opium for horses, are from one to two drachms, and for cattle, two to four drachms. In veterinary practice, opium is not now so much used, as aconite answers almost every purpose for which opium was given, and without in any way binding the bowels. But in case of milk fever, opium, or its alkaloid morphia, is well worthy of a trial, and if taken in time, will scarcely disappoint any one.

TINCTURE OF OPIUM.—LAUDANUM.—Every fifteen drops of the tincture contain one grain of opium. Laudanum is the most costly of all the preparations of opium; and not only that, the large quantity of alcohol, or spirits of wine it contains, is a decided objection to its use in many diseases. Crude opium rubbed down with a little water will be far better when it is to be used at once, or not kept for any time. Laudanum is used in lotions and liniments for the relief of pain, and it enters into eye washes, for the same purpose.

Wine of opium contains spices. Not much used.

Codia, narcotine, narceine, paramorphia, papaverine, meconine and meconic acid, are the various constituents of opium, but they are not used in medicine, either in domestic or veterinary.

BATTLEY'S sedative drops, so well and familiarly known throughout the world, wherever the English language is spoken, though a secret, are known to contain opium, water and a little spirit, and are one-third stronger than laudanum.

Pariera Brava.—A root which is to be sliced, and have one pint of water added to one ounce of the root. Boil, and strain when cold. This is a good tonic for horses. Mix with the feed, half a pint to the dose.

Peach Leaves.—One ounce infused in the same way as tea, with one pint of water, is an excellent application for the skin of animals having the itch and skin diseases.

Peppermint.—*Mentha Piperita.* The essence of this garden plant is sometimes given to horses having colic, and given in doses of twenty drops. Dogs can have three drops for a dose, in the same disease.

Pepper.—A plant, and fruit, of the genus Piper.

(1.) BLACK PEPPER.—*Piper Nigrum.* Occasionally given to horses affected with colic.

(2.) JAMAICA PEPPER.—*Pimento—Allspice.* This is a valuable medicine for horses and cattle affected with fever, loss of appetite and indigestion.

Doses. From three to five drachms, and given in combination with ammonia.

(3.) CAPSICUM.—*Cayenne Pepper.* This is also used for the same purpose as the above, and given in from twenty to thirty grain doses.

Pepsin.—The active principle of the gastric juice of animals. Its cost prevents its use in calves having diarrhœa, when the discharges are like milk. A good substitute for pepsin is rennet, which farmers should have about them, not only for cheese-making purposes, but for use in looseness, or scours in calves. It assists the stomach to digest the milk, which, in diarrhœa, lays upon the stomach, without being digested or changed. Hence, the white diarrhœa, so often seen in calves.

Petroleum.—*Rock-oil.* This substance was formerly highly recommended in chest diseases, but it has been succeeded by more certain and successful drugs for this purpose. However, it is still occasionally used as an external application for sores, and for the destruction of lice, etc., in the skin. It is apt to leave a blemish by causing the hair to fall off, and in some cases, in which I have seen it used too extensively, the hair did not come again. The better way to use coal-oil is to mix equal parts with some other oil having no acrid principle.

Phosphorus.—An elementary substance resembling wax. There is, however, another resembling brick dust,

when in a mass. The preparations of phosphorus are numerous: Hypophosphate of ammonia, hypophosphate of iron, and the phosphate of lime, or bone, or earth, phosphate of soda, and of quinine. Phosphoric acid, diluted, is the one which should be used in veterinary practice.

PHOSPHORIC ACID.—Is used in diseases of the bones of young colts.

Doses. For young colts, the dose will vary from ten to sixty drops, given diluted in cold water.

Pitch.—*Burgundy Pitch.*—The concrete juice of the *abies excelsa.* This is used in the composition of the plaster, formerly used over the loins, in weakness, sprains, lumbago, etc., in the horse. Not now recommended.

Pomegranate Punica.—*Granatum.* The bark of the root of this tree is used for the destruction of tape-worm, in all animals. Take of the bark, one ounce; water, one pint; and boil down one half. The dose for the dog will be a small wine-glassful.

Poppies.—(See Opium.)

Potash.—*Oxide of Potassium.* Preparations of potash are many:—

(1.) CAUSTIC POTASH.—Used as its name indicates, as a caustic, and is a favorite one of mine. Many persons object to it, on account of its extreme fluidity, which I consider to be its most valuable property; as, if it did not readily assume a fluid form, its caustic properties would not be so good. Indeed, according to its fluidity, when applied to a part, so is its caustic property. For the quick reduction of proud flesh, it has no superior.

(2.) CARBONATE OF POTASH.—This is sometimes used

as an antacid, but is not much used in horse and cattle diseases.

(3.) SULPHURET OF POTASH.—*Hepar Sulph—Liver of Sulphur.* This is a valuable remedy when applied to mange in all animals. Dissolve an ounce in a pint of water, first having rubbed the mangy part with fine sand, to expose the insect to the action of the sulphuret.

(4.) SULPHATE OF POTASH.—(See Glauber's Salts.)

(5.) IODIDE OF POTASH.—(See Iodine.)

(6.) NITRATE OF POTASH.—(See Saltpetre.)—The acetate, and tartrate of potash, are not used in veterinary practice.

(7.) CHLORATE OF POTASH.—Used for the same purposes as the nitrate, and in the same doses. The same may be said of the permanganate.

Prussic Acid.—(See Acid.)

Pumpkin Seeds.—An excellent remedy for destroying tape-worm.

Purgatives.—Medicines which empty the bowels.

Pyroxylic Spirit.—*Wood Naphtha.* Used to relieve chronic cough, and is given in half-ounce doses in gruel.

Quinine.—(See Cinchona.)

Rennet.—(See Pepsin.)

Rhubarb.—*Rheum Palmatum.* Rhubarb is a tonic and purgative in dogs, and other carnivorous animals, but in horses and cattle it has scarcely any effect whatever, further than improving the appetite. Better, and much more efficient and cheaper drugs are used in horse and cattle diseases. I know of a gentleman farmer, who uses the spiced rhubarb in young calves, in cases of looseness

of the bowels, and in diarrhœa. The dose of the spiced rhubarb is from one to two teaspoonfuls, repeating it two to three times a day.

Ricinus Communis.—(See Castor-oil.)

Rochelle Salts.—(A Tartrate of Potash and Soda.)

Saffron.—*Crocus Sativus.* (See Colchicum.)

Sagapenum.—This is a gum, and is used for the same purposes as asafœtida.

Sal Ammonia.—*Chloride of Ammonia.* (See Ammonia.)

Salt.—*Table Salt.* Chloride of Sodium, a valuable condiment, when given with the food of animals. Salt is a laxative in horses, cattle and sheep, and is considered a preventive of sheep rot.

Sal Volatile.—This is the compound spirit of ammonia. (See Ammonia.)

Sassafras.—*Laurus Sassafras.* This is a favorite remedy with farmers for their horses, and is given to them in the spring of the year, to strengthen and improve the appetite. Sassafras may be given to horses, either in the form of a powder, or as a decoction, or tea, and mixed with the food.

Sarracenia Purpura.—*Indian Cup or Pitcher Plant.* This plant is found growing along the coast of Labrador, and the shores of the Gulf of Mexico, on wet and marshy land.

Use. This plant has recently proved to be one of the most useful, in the whole list of medicines, and from all accounts, it is, and will still be a blessing to thousands who may become affected with small-pox. For small-pox

in cattle and sheep, it is not only a sure remedy, but also, as good a preventive for the disease. The form and manner of using this medicine, is in that of a tea. The time, however, will soon be, when the chemist will provide us with an extract, or an alkaloid of this plant, which will enable us to give the *essence* of the plant without any inert matter. Take from one to two ounces of the dried root, and slice in thin pieces, place in an earthen pot, or other vessel, and add a quart of cold water, and allow the liquid to simmer gently over a slow fire, for two to three hours, so as to lose one-fourth of the quantity.

Dose. Give to cattle, half a pint; and to sheep, two wine glassfuls; repeating the dose in six hours, when a cure will generally be effected.

Savin.—*Juniperus Sabina.* The oil of juniper is used in veterinary practice, for the purpose of destroying worms in all animals.

Doses. For horses and cattle, the dose is from three to four drachms, and for the dog, three to five drops. An ointment of the dried savin tops is used for the purpose of keeping up the action of blisters. Take one part of the fresh tops, to sixteen parts of lard.

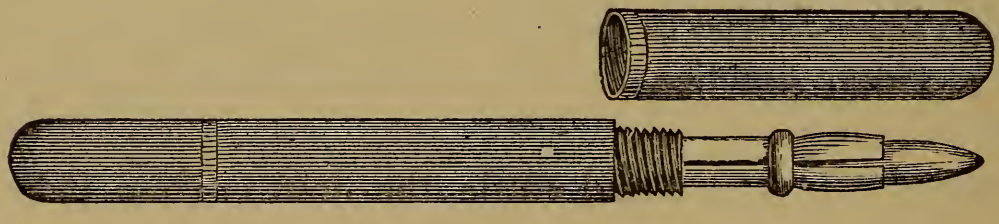
Sedatives.—Medicines which allay inordinate action of the heart.

Senega, Polygala Senega.—*Snakeroot.* This, like other of our native herbs, is often used by country folks in the spring of the year. They give a decoction, or tea of the snakeroot to their horses. It is an excellent remedy in coughs, bronchitis, cold, etc. Take one ounce, boil in a pint and a half of water, and strain through a sieve or strainer.

Dose. For a horse, half a pint, mixed in his feed, night and morning.

Sialagogues.—Medicines which increase the secretion of saliva, such as aconite in large doses, and second crop clover, after it has been exposed to cold nights or a little frost.

Silver, Nitrate of. — *Lunar Caustic.* — Used as a caustic to unhealthy sores and ulcers; and a solution, three to four grains to an ounce of rain or distilled water, is used to the eye in purulent ophthalmia. The nitrate of silver is too costly for general use. The sulphate of copper, or blue stone, will, for most purposes, answer as well, and is very cheap.



CAUSTIC HOLDER.

Soap.—A combination of fatty acid with an alkali.

Soap Liniment.—*Opodeldoc.* A very useful application for sprains, bruises, and for stiff joints.

Soda.—A mineral alkali.

(1.) Carbonate of Soda.—Useful as an antacid, in doses of from two to four drachms.

(2.) Sulphate of Soda.—(See Glauber's Salts.)

(3.) Sulphite of Soda.—This is made by passing a stream of sulphurous acid through a concentrated solution of carbonate of soda. It is a valuable article in the treatment of diseases of horses and cattle. The sulphite of soda possesses the power of neutralizing the action of zumins,

ferments, or leavens, when introduced into the circulation. Professor Polli, of Milan, has clearly demonstrated that this substance is capable of purifying the blood of noxious matters, and further, he has by his experiments upon dogs, proved that glanders can be cured by it; for he says, that forty-five grains of the *virus* of glanders taken from the nares of the nose of a glandered horse, and injected into the circulation of a dog, after the disease had shown itself in the dog, was readily cured by the administration of the sulphite of soda. Upwards of seventy cases have thus been experimented upon by this distinguished professor—all going to show the value of soda, as a purifier of the blood, by its alterative effects.

Sulphite of soda is a remedy in all cases of eruptions on the skin, in farcy, glanders and purpura in the horse, and in pleuro-pneumonia and rinderpest, etc., in cattle. Wherever pus is thrown out as a product of disease, the sulphite of soda should be given. Dogs with distemper should have it to keep the circulation pure of pus. The blood of the dog becomes contaminated in this way, and hence, the good dog falls a victim to this scourge of fine bred animals.

Dose. For horses and cattle, the dose is from half an ounce, to one ounce, given twice in the day. For dogs, twenty grains given in camphor water. In farcy and glanders or other diseases, accompanied with debility, the soda should be combined with gentian and other tonics.

Spanish Fly.—*Lytta Cantharides.* An insect ground into powder, and mixed with lard or oil, making what is familiarly known as a blister. The Spanish fly is, besides its blistering qualities, a very valuable internal medicine, a powerful tonic and alterative, and has been used with success, in the hands of Mr. Vines, of London, England,

in the cure of farcy and glanders in the horse. In the same diseases, and where the lungs were free from tubercles, I have cured them with the Spanish fly, gentian, copper, and the sulphite of soda.

Dose. Spanish fly is given to the horse in five grain doses once a day only, and mixed in cut or soft feed. Horses are more easily affected by the Spanish fly than mares. Blisters of Spanish fly are made as follows: Powdered Spanish fly, one drachm; hog's lard, six drachms; mix, and apply, by rubbing with the hand into the part to be blistered; wash off the part the next day, oil or lard it for a week, and the swelling will leave when the irritation has gone out of the part.

The tincture of Spanish fly was formerly used as the basis of the old sweating blister. An excellent application for the removal of a splint, or soft tumors about the legs of horses, is made as follows: Tincture of Spanish fly, one ounce; oil of croton, twenty drops; well rubbed into the part, it acts like magic; that is, if the tumor can be removed at all by any means.

Specifics.—Medicines which cure disease, but the manner of action is unknown.

Spermaceti.—This is a solid crystalline fat, found in the large head of the sperm whale. There is a plan, however, by which it is said that spermaceti can be made out of the muscles of a dead cow or horse, by enclosing the flesh in a box perforated with holes, and sinking it in a running stream of water for a month or more, when the flesh will be converted into a mass of tough, solid matter. After which, it is treated with nitrous acid, poured over it to remove the offensive smell, and to separate the fat. Another plan is, to pour nitrous acid over the flesh without

immersion in the brook, and which is said to convert the flesh in the short period of three days, into a yellow colored spermaceti. Another plan is mentioned by Lord Bacon, in his work Sylva Sylvarium, in which he says that the flesh of an animal may be changed into a fatty substance, by cutting it into pieces, putting it into a glass vessel, covering with parchment, and allowing it to stand for six or seven hours in boiling water. Experiments of this kind might result in profit to those who would undertake them. The use of spermaceti in horse and cattle diseases, is for the making of ointments and salves, especially in hot weather, when lard cannot be conveniently carried without the risk, not only of losing a portion of the ointment, but of soiling the clothing, or other articles coming in contact with it.

Spirits of Nitrous Ether.—Sweet spirits of nitre is well known to most persons as a good household remedy for fevers, etc. In the treatment of diseases of horses and cattle, sweet spirits of nitre is used as a stimulant and antispasmodic. It is also used in the case of a horse having a chill, and in colic. For colic, it was formerly given in combination with laudanum.

Dose. For horses and cattle, the dose of sweet spirits of nitre will be from one to two ounces, given in cold water to prevent loss.

Spirits of Wine.—*Alcohol.* This is used for making tinctures for medicinal purposes, from the various plants in use. It is also a good stimulant; much better than the bad whisky which is so often poured down the throats of horses affected with colic.

Sponge.—A valuable article for the cleansing of wounds and sores.

Starch.—A good remedy in diarrhœa in all animals, when combined with a few grains of opium, and a little ground ginger, or a few drops of the tincture, commonly called the essence.

Styptics.—Substances having the quality of stopping bleedings from wounds. Examples: Perchloride of iron, cobwebs, the hot iron, and the bandage.

Sudorifics.—Medicines which produce sweating.

Sugar of Milk.—Much used by homœopathists, both domestic and veterinary, in the form of powder, but oftener in the form of globules or small pellets. Not recommended for the treatment of any disease. *Molasses* is the best form in which to give sugar to animals, and it is useful in cases of sick cows, mixed in a drench.

Sugar of Lead.—(See Acetate of Lead.)

Sulphuric Acid.—(See Acids.)

Sulphur.—Brimstone.—Sulphur is kept in the drug stores in three forms, *flowers* of sulphur, *milk* of sulphur, and sulphur *vivum*.

Use. Sulphur is chiefly used for skin diseases, in the form of an ointment. It is believed by many persons to be a great preventive of diseases and distempers in all animals, and is one of the ingredients of an incongruous *mass* extolled and recommended by the Hon. Isaac Newton, Commissioner of Agriculture, as a preventive of cattle diseases. Whatever may be the medicinal virtue possessed by sulphur, it certainly has no prophylactic effects mixed with tar, etc. The simple ointment of sulphur is made as follows: One part of the flowers, or sulphur vivum, mixed with four parts of lard. In winter, when lard is hard,

oil should be used instead, thus forming a liniment of sulphur more easy of application.

Doses. Sulphur, as a laxative for horses and cattle, should be given in doses from one to three ounces, and administered in gruel, in the form of a drench. For dogs, the dose is one to two drachms. It is not recommended as an internal medicine.

Sulphurous Acid Gas.—This is one of the most powerful disinfectants we have. The great objection to its general use for this purpose is, its poisonous character when breathed or inhaled to any extent. But from recent experiments instituted by Dr. James Dewor, of Kirkcaldy, Scotland, for testing the efficacy of sulphurous acid gas as a disinfectant, results are shown which lead to the conviction, that diseases such as cholera in man, and rinderpest and pleuro-pneumonia in cattle, may not only be prevented, but much modified by this, hitherto considered, poisonous gas. The method of generating sulphurous acid gas is very simple and inexpensive. It is only necessary to have a small chaffern of red hot cinders from a coal fire, a small crucible on the hot cinders, and a piece of sulphur-stick about as large as a man's thumb placed into it. This will fumigate a large cattle shed, or stable, in twenty minutes. Contrary to expectation, the animals seem to enjoy it, and it acts at the same time as a tonic on man and beast. The shed or other house must be well ventilated, by having the windows a little open before, during, and after the fumigation. Sanitary rules must be enforced in regard to cleanliness, removal of dung-heaps, etc. During the prevalence of such epizootics as are above named, the fumigation may be made according to the foregoing directions, four or five times in the day. It is further said,

that the treatment has not only cured some cases of the above named diseases; but that mange, ring-worm and lice have also vanished before it, and that greasy heels in horses have also been cured by it, while severe cases of tubercles of the lungs, glanders, and farcy have also been relieved by the inhalation of this gas. This is well worthy a fair trial, and if it but accomplish half what is claimed for it, a great and cheap fumigation and disinfectant is within the reach of any one. But, bear in mind, that it is a poisonous gas, and to prevent a deleterious effect, have free ventilation through the whole place.

Sulphate of Zinc.—*White Vitriol.* This is a valuable article for healing wounds and sores. It is not administered internally to any animal, except as an emetic to dogs. As an external wash for sores, one part of zinc to twenty of rain-water, will answer for most purposes. For eye-wash, three to four grains to the ounce of water. This is one of the best applications which can be applied to the eye in cases of purulent ophthalmia.

Tannate of Glycerine.—An excellent application for the eyes, in purulent ophthalmia, and for moist sores, wherever situated upon the body.

Tannin.—This is the acid of barks, and is valuable, mixed with water, in running ulcers and sores, and in diarrhœa, in all animals. The powder sprinkled upon bleeding sores, will in many cases stop them. One drachm to a pint of cold water makes a good eye-wash, and in many cases dries up the scum, and removes it altogether. It is certainly a cheap and useful remedy, and can do no harm to the eye.

Doses. For horses and cattle, in diarrhœa, the dose of tannic acid is from half to one drachm, given in gruel as a

drench. For calves with the same disease, give from ten to twenty grains as a dose, mixed with wheat-flour gruel. Snuffed up the nostrils by man, in bleeding from the nose, it will in most cases arrest it at once.

TANNIN OF KRAMERIA.—This is used for the same purpose as the preceding, but it is a better stypic, or arrester of bleeding from the skin or other sores.

Tar.—*Pix Liquida.* Tar is not now used internally to the extent it formerly was. To cattle it is still given in a disease of the throat called *clyers.* For this purpose egg-shells are filled with good Barbadoes tar, and suspended on the end of a split stick, and gently pushed down the throat of the ox. As an external application, tar is still used on sores about cattle, to keep the flies off; and it is used to make stopping for horses' feet, singly, and mixed with clay. It is kept in every horse-shoeing shop for putting on the soles, usually with cotton, and having leather nailed on with the shoe.

OIL OF TAR.—This is an excellent application when mixed with equal parts of sweet, or some fish oil, to promote the growth of horn on the foot of the horse. To give it a dark color to suit the foot, lamp-black may be stirred in, in sufficient quantity to make a *black* hoof ointment, which will be found an excellent formula for this purpose.

Tartar Emetic.—(See Antimony.)

Tobacco.—*Nicotiana Tabacum.* Tobacco is used as a medicine, principally in skin diseases, and for the destruction of lice and other insects, in the wool of sheep. Tobacco smoke is a favorite remedy with some veterinarians, for the removal and killing of worms, and in constipation, and colic. For these purposes, better and safer agents

are in every-day use. Tobacco in all, or any of its forms, is dangerous, being followed by great sickness, nausea and prostration, from which many animals are ultimately destroyed.

Tragacanth.—(See Gum.)

Turpentine.—*Terebinthæ.* The various varieties of turpentine in market.

(1.) COMMON TURPENTINE.—The produce of the *pinus palustris* of North Carolina, and other States, and also of Norway, and the north of Europe. The *Pinus sylvestris*, or Scotch fir, yields considerable turpentine.

(2.) VENICE TURPENTINE.—This is procured from the *Larix Europea.*

(3.) CANADA BALSAM.—Procured from *Abies Balsamæ*, and is considered to be the purest of all the turpentines; hence it is called sometimes, the balsam of Gilead.

(4.) FRANKINCENSE.—A product of Norway, and the north of Europe. This variety enters into the composition of what is known as Burgundy pitch, and is used in veterinary practice for making adhesive plasters for the loins of horses having been sprained, or having lumbago.

(5.) OIL OF TURPENTINE.—This is commonly called the spirits of turpentine, and is used very largely in horse and cattle diseases, both for internal administration and external application.

Uses. Oil of turpentine is a powerful stimulant, diuretic, and antispasmodic, and is, therefore, used in colic in the horse, in puerperal apoplexy in cows, and in general debility in all animals. As an external embrocation, it is very efficient when combined with an equal portion of sweet oil, but very dangerous when applied to the skin of the horse alone. The horse will become restless, and, in some cases, utterly unmanageable.

Doses. The doses of oil of turpentine for horses and cows are from one to two ounces, always mixed with its own bulk of oil, especially for horses. For dogs affected with tape-worm, half to one drachm is the dose, mixed with the yolk of an egg.

(6.) Rosin, or Resin.—The residue left from the distillation of turpentine, which is chiefly used by horsemen to cause the horse to urinate more freely. Much mischief is often done to horses by the administration of rosin. Indeed, most diseases of the kidneys and of the loins can be traced to over-dosing with this substance. The oftener rosin is given to the horse, the more he appears in the eyes of the driver to stand in need of his favorite dose. The kidneys become over-worked, the desire to urinate is more frequent, less urine is voided each time, and the poor man does not see the mischief he has already done, but hastens to give the horse more to remedy the urinary defect he has thus been instrumental in producing. It will be well to remember that powerful diuretics, like powerful purgatives, tend only to weaken and debilitate. If there be a urinary defect, find out the cause, and, if possible, have it removed, and the effect will cease, "*sublata causa, tollitur effectus,*" but do not attempt to do so by force, and against all science and common sense. Other preparations of turpentine have already been noticed. (See Tar.)

Urse Ursi.—The leaves of the whortleberry. They were once in repute in diseases of the horse, but are now fallen, and others have taken their place. They were used chiefly in diseases of the bladder and kidney.

Valerian.—*Valeriana Officinalis.* However useful valerian may be in nervous irritation in man, it is not so useful in veterinary patients. Camphor, and the gum

resins, or asafœtida, answer our purpose better than valerian.

Valerianate of Soda.—This has been found useful in chorea, or twitching of the muscles in the dog, in doses of from one to two grains.

(1.) VALERIANATE OF IRON.—A good tonic for the dog.

(2.) VALERIANATE OF QUININE.—An excellent remedy for agues in man.

Veratrum.—*White Hellebore.* If we had not so useful a sedative medicine as we have in aconite, I would certainly recommend the tincture of white hellebore-root, in all diseases for which aconite is recommended. On account of its being more dangerous than aconite, in case of overdose, I will not say much more about it, as wherever white hellebore is found in the country stores, aconite will be there also. Hence, there can be no good reason for recommending it when aconite can be procured.

VERATRIA.—The alkaloid of white hellebore, and is one of the most destructive of the deadly poisons. Nothing could be more so than this preparation of hellebore; and what is more, at present, no *test* is known whereby to detect its presence within the stomach or system.

Wax.—This substance is used for giving hardness and consistency to ointments, and is a favorite with me in the form of shoemaker's wax, for the purpose of filling up cracks and holes in the feet of horses, to keep out sand and dirt. To be applied as follows: Make the wax in the form of a stick, so that it can be held by one end, while you hold a hot iron to the other, and hold it over the hole or crack, so that the warm wax will drop into it. When the part is full, wet the finger, and by this means the wax

can be smoothed, so that ordinary observers can scarcely observe a deficiency in the foot. The hole or crack must be perfectly dry, and free from moisture, or else the wax will not stick very long. When dry, and the wax is put properly in, it will last for a month, or till the next shoeing time.

Willow Bark.—A much neglected, valuable and cheap medicine. This bark has within it a crystalline substance called *salicine*, which is an excellent substitute for the expensive quinine. Farmers and others will do well to gather it in sufficient quantity, and have it dried; and in the spring of the year, or when any of the horses are weak, or out of sores, take of the willow bark one pound, and boil in four quarts of water, till two quarts are left; then strain for use, and give a tumblerful, mixed in cut feed, once or twice in the day. This will be found much better than the black snakeroot already spoken of under its proper head.

Yeast.—Brewer's yeast is one of the best applications for an unhealthy sore or ulcer, as it immediately changes its look and smell. A mixture of yeast and charcoal is a domestic remedy not to be overlooked in the treatment of sores, especially in the summer time. The yeast and the charcoal are to be mixed in the form of a poultice, and used as such, occasionally changing it so that full benefit may be given to the sore by its use. After the sore is cleansed and corrected, it may be then healed as a simple, healthy sore, by other remedies amply described through the book.

Zinc.—There are several preparations of zinc, which are used in the treatment of horse and cattle diseases, but chiefly in the form of external applications.

(1.) Oxide of Zinc.—This is a white powder, like wheat-flour, and is useful when applied as a powder in greasy heels and other sores which discharge a sanious fluid from them. Oxide of zinc is often used in the form of an ointment mixed with lard. An excellent ointment is also made by soap shaved down, moistened with a little water, and having oxide of zinc added to it. This is a good form for greasy heels and scratches on horses that have to work every day. It keeps down irritation and fever, prevents swelling of the legs, and is easily washed off on the horse coming into the stable for the night.

(2.) Carbonate of Zinc.—This is used under the old name of *calamine*, either in the form of a powder or an ointment. The ointment is made by adding four parts of lard to one of calamine. It is good for healing sores.

(3.) Sulphate of Zinc.—This preparation of zinc has already been described under the head of sulphate of zinc, (which see.)

(4.) Chloride of Zinc.—*Butter of Zinc.* This, as well as the other forms of zinc, is not used as an internal medicine, except the sulphate, which is occasionally given to the dog as an emetic.

Chloride of zinc is a powerful disinfectant and deodorizer, and is used in the healing of wounds and sores. The solution is the usual form of using it. Two grains of the chloride of zinc to an ounce of rain-water, makes a good eye-wash. For ordinary sores, four to five grains of the zinc to one ounce of rain-water, is a good application. One characteristic of the preparations of zinc when applied to sores is, no proud flesh can or will arise during their use. The chloride of zinc is used by some veterinarians as a caustic, but for this purpose better caustics, and cheaper ones, will be found elsewhere described.

(5.) ACETATE OF ZINC.—This is made by dissolving oxide or carbonate of zinc in acetic acid. The chief use of the acetate of zinc is for the healing of wounds. In European stables it is employed for the purpose of wetting bandages applied to old hunters and other horses, whose legs cannot be otherwise kept fine and free from swelling. The bandages usually employed in such cases are made of wash-leather, which is so extensively used for drying carriages after being washed, and is called *chamois* leather.

Zingiberis.—(See Ginger.)

Zyloidine.—This is a white substance, which is insoluble, and is obtained from starch, concentrated nitric acid, and cold water.

PRESCRIPTIONS AND PREPARATIONS.

Cerates.—Used for dressing sores and ulcers.

(1.) SIMPLE CERATE.—Take yellow or white wax, three ounces; olive oil, two ounces; melt them on a slow fire.

(2.) TURNER'S CERATE.—Take of simple cerate, five ounces; prepared calamine, one ounce; mix, and stir till cold.

(3.) CERATE OF ZINC.—Take simple cerate, six ounces; melt, and add oxide of zinc, one ounce, and stir till cold.

(4.) RESIN CERATE.—*Yellow Basilicon.* Take yellow rosin and yellow wax, of each half a pound, then add eight ounces of olive oil or lard, melt together over a slow fire, and strain through flannel cloth while hot. This is an old, but excellent application for sores, scalds, burns, etc.

Clysters.—For colic of all kinds, take warm water of about blood heat, one stable bucket full; four ounces of common table salt, soap sufficient to make a good lather or froth; of this, three to four quarts may be injected in the rectum, every half hour till the animal is well. For the expulsion of the fundament bots, injections of flaxseed oil are an excellent and safe method. *Tobacco* smoke injections are sometimes used for their removal, as well as in cases of constipation. To give injections of tobacco smoke, an instrument having both force and suction is necessary. Tobacco smoke is not recommended for either of these affections by the author.

Drenches.—Used in cases of colic: Take sulphuric ether, half an ounce; laudanum, two ounces; flaxseed oil, one pint; mix. Or, take spirits of turpentine, one ounce; tincture of aconite root, twenty-five drops; aloes, one ounce in solution; mix. Or, take warm ale, two pints; ground ginger, half an ounce; tincture of aconite root, twenty drops; mix. Used in flatulent colic, accompanied with swelling of the belly: Take laudanum, two ounces; aloes in solution, one ounce; chloride of lime, half an ounce; mix. Or, take tincture of aconite root, twenty drops; aloes in solution, one ounce; sulphite of soda, one ounce; mix. Or, take spirits of hartshorn, three drachms; aloes in solution, one ounce; water, one pint; mix.

Eye Lotions and Washes.—Astringent Eye Lotion.—Take sulphate of zinc, five grains; rain-water, one ounce; mix.

Lotion for Purulent Discharges from the Eye.—Take sulphate of copper, three grains; laudanum, ten drops; rain-water, one ounce; mix.

For the Same.—Nitrate of silver, four grains; rain-

water, one ounce; mix, and apply with a camel's hair pencil once in the day.

SOOTHING EYE-WASH.—Take extract of belladonna, half a drachm; rain-water or distilled water, six ounces; dissolve and strain. This is to be used warm, as a fomentation to the eye.

MILD ASTRINGENT EYE-WATER.—Alum, four grains; rain-water, one ounce; mix.

SEDATIVE EYE-WASH.—Take sulphate of atropine, three grains; rain or distilled water, one ounce; mix, and strain. The reader of this book will remember that belladonna, or atropine, when applied to the eye, will cause the pupil of the eye to dilate.

Eye Salves.—NITRATE OF SILVER OINTMENT.—Take nitrate of silver, twelve grains; dissolve in as many drops of water; simple cerate, one ounce; mix.

PRECIPITATE OINTMENT.—Take red precipitate of mercury, three grains; pure lard, two drachms; mix, and use when the eyelids are red and oozing.

Freezing Mixtures.—Take sal ammoniac, five parts; nitre, five parts; cold water, sixteen parts; mix. Or, take sal ammoniac, and nitre, of each five parts; Glauber's salts, eight parts; cold water, sixteen parts; mix. The article to be cooled should be placed in a tin vessel, which should be put in the mixture just as a butter kettle would be placed in ice water. By throwing a handful of sal ammoniac, or coarse salt or nitre, upon ice or snow, a low degree of cold will be produced, sufficient for all purposes. Freezing mixtures are of much benefit applied to sprains, when ice cannot be had.

Liniments or Embrocations.—These are for exter-

nal applications, and are used in the cure of sprains, bruises, chronic swellings, etc.

LINIMENT OF AMMONIA.—Take solution of ammonia, two ounces; sweet oil, six ounces; mix.

LINIMENT OF CAMPHOR.—Take camphor, one ounce; olive or sweet oil, three ounces; mix.

LINIMENT OF ACONITE.—Take tincture of aconite root, two ounces; olive or sweet oil, four ounces; creosote, one ounce; mix. This is one of the most valuable embrocations which can be applied to a painful bruise, or sprain of whatever kind. It allays and removes inflammation, irritation and pain.

LINIMENT OF LEAD.—Take soap, (castile,) five ounces; camphor, one drachm; Goulard's extract of lead, half an ounce; boiling water, one pint. Cut the soap into thin pieces, and the camphor in fine powder, and stir them into the Goulard's extract, then pour in the boiling water.

SOAP LINIMENT.—*Opodeldoc.* Take castile, or even white soap, three ounces; oil of rosemary, two drachms; oil of thyme, one drachm; camphor, one ounce; spirits of wine, one pint. The camphor is to be in fine powder, and the soap in fine shavings. The camphor, oils and soap are to be dissolved in the spirits of wine. Place the vessels holding these articles by the fire till the soap is dissolved. It should be kept in wide-mouthed bottles, of from four to six ounces' capacity.

Observe. The oils of rosemary and thyme, entering into the mixture, are not so much for their medical virtues as for the fine smell. In horse and cattle practice, these oils can be dispensed with; or, add the same quantity of olive oil.

SOAP LINIMENT.—*Common.* This may be used instead of the opodeldoc. Take soap in shavings, four ounces;

camphor, in powder, one ounce; spirits of wine, one pint; laudanum, half an ounce; and dissolve. This is a cheap and useful liniment for sprains and bruises.

Turpentine Liniment.—Take spirits, or oil of turpentine, two ounces; olive oil, two ounces; mix.

Lime Liniment.—Take equal parts of lime-water and linseed oil, and shake them well together till a white, thick, creamy, or saponaceous compound is made. This is used in cases of burns and scalds, whether in man or beast. Spread some of the liniment on a soft cotton cloth, lay it on the burned part, and when dry renew again.

Carbolic Acid Liniment.—Carbolic acid, one drachm; olive oil, eight ounces; mix. Or, water alone may be used for ordinary sores instead of the oil; but for scratches, the same quantity of glycerine will answer a better purpose.

Creosote Liniment.—Take creosote, one ounce; oil of turpentine, one ounce; olive oil, two ounces; mix. This is a favorite liniment for sprains, bruises, and sores, and gives relief from pain when rubbed upon the sprained hock-joint and stiff joints generally.

Ointments.—Blistering Ointment.—Take of Spanish fly, in powder, one drachm; hog's lard, six drachms; mix. This is the ordinary blistering ointment. The old formula is, one of Spanish fly to four of lard. The weaker ointment answers the better purpose.

Red Iodide Ointment.—Take of bin-iodide of mercury, one drachm; hog's lard, one ounce; mix. This is the most useful ointment the veterinary surgeon can employ, or possess, for the cure of splints, ring-bones, spavins, indurated or hardened tumors, and the reduction of enlargements of the glands of the neck. Iodide ointment

should only be used once in five days, or till the effects of the previous application have subsided a good deal. This precaution is necessary to prevent a blemish being made by the hair falling off and not growing again, which should always be avoided.

GREEN OINTMENT.—Take of simple cerate or ointment, one ounce; add one drachm of verdigris (diacetate of copper), and mix. This ointment will heal sores when other applications have failed.

SULPHUR OINTMENT.—Take of iodide of sulphur, one drachm; hog's lard, one ounce; mix. Used in mange and skin diseases.

ZINC OINTMENT.—Take carbonate of zinc, one drachm; hog's lard, one ounce; mix. A good healing ointment.

LIVER OF SULPHUR OINTMENT.—Take of liver of sulphur, one drachm; hog's lard, one ounce; mix. Used in mange and other skin diseases. A more cleanly and easily managed form, performing all its actions, is one part of the liver of sulphur to eight parts of water.

FRENCH HOOF OINTMENT.—Take of olive oil, wax, lard, honey and white turpentine, equal parts; dissolve, or digest over a slow fire. For black hoofs, a little ivory-black stirred in while hot, will give it sufficient color. For blue feet, add sufficient Prussian blue or indigo, along with the ivory-black till a blue tint is given to the ointment.

COMMON HOOF OINTMENT.—The hoof ointment sold for such, is composed of Venice turpentine wax, and suet in quantities sufficient to give consistence or thickness to the mass. Oil of tar and oil of olives, or some of the fish oils, equal parts, and sufficient lamp or ivory-black stirred in to give thickness to the whole, is probably the best ointment which can be used for the hoof of the horse.

Plasters.—Plasters are not often called for in horse and cattle diseases, but some cases arise which require a plaster over the back or loins, such as chronic sprains, lumbago, etc. Take Burgundy pitch, four parts; wax, one part; camphor, half drachm; Spanish fly, half a drachm; melt over a slow fire, spread on soft leather, and lay over the loins while warm. This will be sufficient for all purposes where a plaster is indicated. Plasters should be worn six weeks, so that the horse will reap some benefit from them.

Poultices.—Carrot Poultice.—Take of washed carrots, boil till soft, strain off the water, and bruise the carrots into a fine pulp or mass; spread upon strong cloth. Used for sores of an unhealthy kind.

Linseed Meal Poultice.—Take of boiling water one quart, stir in sufficient linseed meal with a wooden stick or spoon, and beat it well so as to have no lumps. To be spread on strong cloth or canvas, and applied.

Yeast and Charcoal Poultice.—Take yeast, one pint, and powdered charcoal sufficient to give consistence to the whole when well stirred in. This is a valuable poultice, and is not as well known as it ought to be. Used in sores discharging a stinking matter, which it soon arrests.

Spirits.—Proof Spirits.—Take rectified spirits of wine, three parts by measure; water, two parts by measure; mix. This is the proper strength for making tinctures. Keep the rectified spirits by itself till wanted, the water can be added when needed.

Spirits of Camphor.—Take of camphor, two and a half ounces; rectified spirits, one pint; dissolve. Used for sprains, bruises and sores.

Tinctures.—TINCTURE OF ARNICA.—Take arnica flowers, four ounces; alcohol, one quart; macerate, or steep for one week, and strain.

TINCTURE OF ACONITE ROOT.—Take of the dried and bruised root, four ounces; alcohol, half a pint; macerate for two weeks, and strain. This medicine no farmer can very well do without. Those who do without it, do not know its actual value. Twenty drops of the tincture of aconite root, under certain circumstances, is as valuable as the animal which may stand in need of its great curative virtues. Measured by its power in curing disease, its weight in gold is not its value.

COMPOUND TINCTURE OF BENZOIN.—Commonly called *Friar's Balsam.* Take of gum benzoin, one and a half ounces; storax, one ounce; balsam of tolu, half an ounce; aloes, in powder, two drachms; alcohol, one pint; macerate for one week, and strain or filter. Used for healing sores.

TINCTURE OF ALOES AND MYRRH.—Take aloes, in powder, one ounce; saffron, half an ounce; tincture of myrrh, half a pint; macerate for two weeks, and strain. Used for healing sores and wounds.

TINCTURE OF IODINE.—Take of iodine, half an ounce; iodide of potassium, one ounce; alcohol, one pint; macerate for a day or so, and it is fit for use. Used as an injection for abscesses and empty cavities. It is also used by some for enlargements, in the same way as it is used for erysipelas in man, by painting the affected part.

Waters.—LIME-WATER.—Take a lump of lime or limestone, of about a pound weight, lay it on a soup plate and wet it with water, which will soon convert the hard stone into a fine powder. Then put it into a stone jar holding a gallon or upwards, fill in one gallon of water,

and cork it closely. It is now ready for use when wanted. The same lime may be used repeatedly, by pouring fresh water, as the other is taken out. This water is what the lime liniment is partly composed of.

TAR-WATER.—(*Bishop Berkeley's Receipt.*) Pour a gallon of cold water on a quart of liquid tar; stir, mix and work them together thoroughly, with a wooden ladle, or flat stick, for five or six minutes. Then let the vessel stand, closely covered, for three days and nights. Carefully skim the surface, without moving the vessel, pour off the clear solution, and keep it in bottles well corked for use. This is a useful medicine for man and horse in chest diseases, and it would be well worthy of a trial in chronic cough in the horse.

MEDICINES TO BE KEPT ON HAND.

The following medicines should be kept in every farm-house, where there are horses and cows. If the farmer should not think it of sufficient importance, he should at least ascertain what is kept in the village, or country store, so that he may know exactly where to get what he may at any moment stand in need of, for his horse or cow, in case of accident or sickness. Medicines should be kept in bottles; some in wide, and others in narrow-mouthed ones. A plain label should be affixed to every bottle, and on those known to be poisonous, a dark-colored label should be used, and marked *Poison*. This will often prevent mistakes and accident.

Tincture of Aconite Root.—One ounce.
Red Iodide of Mercury.—One drachm.
Tincture of Nux Vomica.—One ounce.
Spirits of Turpentine.—Two ounces.
Epsom Salts.—Two pounds.
Simple Cerate, or Ointment.—Two ounces.
Linseed Oil.—One quart.
Aloes.—One ounce.
Carbonate of Ammonia.—One pound.
Gentian Root.—Half a pound.
Sulphur.—Half a pound.
Olive Oil.—Half a pint.
Chalk.—Two pounds.
Powdered Opium.—One ounce.
Ginger.—One pound.
Fenugreek.—One pound.
Sulphate of Iron.—Half a pound.
Caustic Potash.—Six sticks.
Glycerine.—Half a pound.
Lime-water.
Tannin.—One ounce.
Catechu.—One ounce.
Sulphuric Ether.—Two ounces.
Blue Stone.—Two ounces.
Oxide of Zinc.—Four ounces.
Sulphuric Acid.—One pound.
Spirits of Salt.—One pound.
Sulphite of Soda.—One pound.
Spanish Fly.—Half an ounce.
Carbolic Acid, (in crystals).—One ounce.
Creosote.—Half an ounce.
Alcohol.—One pint.
Cotton, or Tow.—One pound.

LAUDANUM – Two ounces.
NITRATE OF SILVER.—Two sticks.
CHLORIDE OF LIME.—A few pounds.
POWDERED CHARCOAL.—A few pounds.
BLACK OXIDE OF MANGANESE.—Three ounces.
ROLL SULPHUR.—Half a pound.
LIVER OF SULPHUR.—Three ounces.

TABLE OF DOSES ACCORDING TO AGE.

If the dose is for a full grown animal, of whatever kind, let it be *one* ounce.

A colt of one year will require one-third of an ounce.

A two year old will require one-half of an ounce.

A three year old will require three-fourths of an ounce.

The same proportion may be observed in cattle, from one year old and upwards. But a calf, a week or two old, will require another division of dose, still following the same rule. The dose for a one year old is one-third of the dose of an adult, or full grown ox. Then the dose for a calf of four weeks will be one-twelfth of that given to a one year old, and a two months' old calf or colt, will require one-sixth of that of a one year old animal. For a one week old animal, the dose will be one-fourth of that of the animal aged four weeks. The rule and the dose are merely approximate, but it is the best and only plan we can offer as a rule or guide for a *posological* table. Some persons have advocated a *decrease* in the dose for old animals. This I cannot favor, as but few horses live to be so old that a full dose of medicine would be an injury to

them. The great trouble with aged horses, is not from a failure of the constitution and the general system, but from defect in the teeth, whereby, in winter, they are nearly starved, because of inability to masticate what they eat. If their food could be prepared, as is done for old men, their lives and usefulness would be prolonged; then it would be time enough to think of diminishing the dose for old horses.

ARTICLES NECESSARY FOR MEASURING, WEIGHING, ETC.

One pair of scales and weights capable of weighing from one grain to one ounce.

Two glass measures, one measuring from five drops to sixty—the other from one drachm to six ounces.

One Wedgewood mortar, with pestle to match.

One tile for making ointment upon.

Two spatulas, or round-edged knives, for mixing and dividing powders, and mixing ointments.

A few small bottles with corks, to hold from one to eight ounces.

A few labels for pasting on the bottles, with directions for the use of the medicine.

A few labels with the word "poison."

A few sponges.

One ox's horn cut sloping at the wide end for drenching horses or cattle, which is better than a bottle. A bottle made of block tin, in the shape of a champagne bottle, is a good article for drenching with.

Equivalents.

A table-spoonful is equal to half an ounce by measure.

A dessert-spoonful is equal to two fluid drachms.

A tea-spoonful is equal to one fluid drachm.

A wine-glassful is equal to one and a half fluid ounce.

The surest way, however, to get the true quantity is to have the article measured by properly graduated weights and measures. It will not, however, be necessary to weigh each powder separately. Thus, half a pound of ginger can be easily divided into ten or twelve equal parts with a knife, without the trouble of weighing each powder separately.

FOOT-AND-MOUTH DISEASE

By John R. Mohler, V. M. D.,
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Nature and Characteristics.—Foot-and-mouth disease, also known as aphthous fever, epizootic aphtha, and eczema contagiosa, is an acute, highly communicable disease chiefly confined to cloven-footed animals and characterized by an eruption of vesicles or blisters on the mucous membrane of the mouth and on the skin between the toes and above the hoofs. The vesicles rupture, forming erosions and ulcerations; there are also salivation, tenderness of the affected parts, loss of appetite, lameness, emaciation, and diminution in the quantity of milk secreted.

The tremendous ravages of the disease are seen in the number and variety of the species attacked. While it may be regarded as essentially a disease of cattle, hogs would seem to be as easy a prey. Almost in the same grade of receptivity are sheep and goats. Next in order of susceptibility come the buffalo, American bison, camel, chamois, llama, giraffe, and antelope. Horses, dogs, cats, and even poultry may occasionally become infected with the disease, the last three being particularly dangerous as carriers of the contagion. Man himself is not immune, and the frequency of his infection by coming in contact with diseased animals is established by numerous observations.

As with other communicable diseases, the source and origin of foot-and-mouth disease have given rise to much speculation. The disease had been known in Europe for centuries, but it was not until comparatively recent years that the erroneous conceptions of its spontaneous origin as a result of climatic and meteorological conditions, exhausting journeys, etc., were abandoned. It is now conceded that foot-and-mouth disease is propagated by a specific virus and that every outbreak starts from some pre-existing outbreak.

Investigators have so far been unable to identify or isolate the specific organism causing the disease, although numerous attempts have been made to cultivate and stain it by laboratory methods. Experiments have shown that the virus will pass through standard germ-proof filters, thus indicating its minute size and the reason it has not been detected by the staining methods. The contagion may be found in the serum of the vesicles on the mouth, feet, and udder; in the saliva, milk, and various secretions and excretions; also in the blood during the rise of temperature.

A wide distribution of the virus and a rapid infection of a herd is the result. Animals may be infected directly, as by licking, and in calves by sucking, or indirectly by such things as infected manure, hay, utensils, drinking troughs, railway cars, animal markets, barnyards, and pastures. Human beings may carry the virus on their shoes and clothing and transmit it on their hands when milking, since the udder is occasionally the seat of the eruption. It may also be carried by dogs, cats, rats, chickens, pigeons, etc. Milk in a raw state may also transmit the disease to animals fed with it.

The observations made by some veterinarians would lead us to suppose that the virus is quite readily de-

stroyed. It is claimed that stables thoroughly cleaned become safe after drying for a short time. Hence, litter of all kinds, such as manure or soiled hay and straw, may remain infective for a longer time because they do not dry out. Other authorities maintain that the virus is quite tenacious and may live in stables even so long as a year. They also state that animals which have passed through the disease may be a source of infection for several months after recovery.

Unlike most other infectious diseases, foot-and-mouth disease may attack the same animals repeatedly. No definite immunity is conferred by an attack.

The period of incubation (that is, the time elapsing between the exposure of an animal to infection and the development of the disease in that animal) is variable, usually from three to six days. The disease may appear in 24 hours, or, in exceptional cases, not for 18 days or even longer.

Losses.—The highly contagious character of foot-and-mouth disease and its rapid spread to practically all exposed susceptible animals lead to heavy losses. Since the mortality is comparatively low, ranging from only 3 per cent or less in mild forms to 30 or 40 per cent in malignant cases, the havoc caused by the pestilence is sometimes underestimated. But there are other sources of loss which are much more important than the actual mortality. The fever and the difficulty of eating cause a rapid and extreme loss in flesh and a lessening or cessation of the milk secretion. The udders often become inflamed and ruined by the formation of abscesses, and cows affected in this way are sometimes rendered permanently valueless for milk production. The inflammation of the feet may cause the horn to drop from the toes,

producing great lameness and lasting injury. Abortion is frequent with pregnant animals, and typical lesions have been observed in the newly born at birth. Altogether these losses may amount to 20 or 30 per cent of the value of affected animals.

In addition there are indirect losses of a commercial nature. Dairy farmers are put out of business for a time. Necessary quarantine restrictions greatly interfere with the movement of live stock and such commodities as hay, straw, hides, and farm produce. The business of the stockyards and slaughtering centers is greatly interfered with. Sometimes it is necessary to close stockyards for disinfection. The whole business of marketing, transporting, feeding, and slaughtering is interrupted and deranged. Losses of this character may reach enormous proportions.

Symptoms.—In three to six days or even longer after the exposure of the animal to the infection the disease makes its appearance. It is usually first indicated by the animal suffering from a chill, quickly followed by an invasion of fever, which may cause the temperature to rise as high as 106° F. These symptoms are not always present, or may be in so slight a form as to escape notice. Following this in one or two days it will be noticed that small vesicles or blisters about the size of hemp seeds or a pea are making their appearance upon the mucous membranes of the mouth at the border and upper surface of the tongue near the tip, the inside of the cheeks, on the gums and the inner surface of the lips, or on the margin of the dental pad. These little blisters contain a yellowish watery fluid and gradually become more extensive as the disease advances. Soon after the eruptions have appeared in the mouth of the

animal it will be noticed that there is considerable swelling, redness, and tenderness manifest about the feet, at the coronet and between the digits of each foot. Eruptions similar to those within the mouth make their appearance upon these swollen regions of the foot a day or two later, and at this stage it is usual to find that like lesions have made their appearance upon the perineum of the victim. In the case of milch cows, the udder, and more particularly the teats, show the same vesicular eruption, but the latter as the result of milking soon become covered with reddened spots deprived of the superficial layer of skin and may develop deep, obstinate fissures.

As soon as the disease has become well established the patient evinces pain when attempting to eat; in fact the appetite is often so seriously affected that all food is refused and the animal uneasily opens and shuts its mouth with a characteristic smacking sound, while strings of cohesive, ropy saliva hang suspended from the lips. With the advance of the disease the vesicles have widened and extended until they may reach a diameter ranging from that of a dime to that of a silver dollar. These rupture soon after their appearance, sometimes on the first day, more rarely on the second or third day. After they have ruptured the grayish white membrane forming the blister may remain attached for a day or more, or disappear speedily and leave deeply reddened sensitive spots or erosions, both within the mouth and upon the coronet and between the claws of the feet. Similar erosions, which quickly form scabs as a rule, may be noticed in cases in which the teats of milch cows have become affected, and instances are reported in which sloughing of the tegument immediately around the lesions upon the udder has occurred. Owing to the

tough, fibrous nature of the bovine skin, it is exceedingly rare for sloughing to occur upon any part of the body other than those mentioned.

The attack upon the feet of an animal is frequently manifested in all four feet at once, but one or more of the feet may entirely escape and remain unaffected throughout the course of the disease. The ulceration of the interdigital tissue may extend to the ligaments of the fetlock or produce disease of the joint or bone. As the feet become sensitive and sore the animal lies down persistently, and it has been found that bed sores develop with amazing rapidity in all such cases and wholely baffle all attempts at treatment until after the patient has regained its feet.

The disease may attack some of the internal organs before it appears upon any of the external tissues. These cases are very liable to prove quickly fatal. The animal dies from paralysis of the heart, due to the formation of poisonous principles within the system, or it may suffocate by reason of the action of these same poisons upon the tissues of the lungs, or it may choke to death as a result of paralysis of the throat.

In cases of serious affection of the udder the erosions will often be found located within the passages of the teats, resulting in a "caked" udder, and the same toxic poisoning which is the cause of death in the apoplectiform types just mentioned may arise from this source. In any event the milk from such cases will be found dangerous for use, causing fatal diarrhea in sucking calves or young pigs and serious illness in human consumers. The milk obtained from cows suffering with foot-and-mouth disease is not readily converted into either butter or cheese, but remains thick, slimy, and inert in spite of churning and attempts at curdling.

Pregnant animals may abort. In pigs, sheep, and goats the lesions in the foot are most common, but both forms may be observed or only the mouth lesions.

When the disease has become fully established it will be found that the duration of the attack will vary greatly with different animals. From 10 to 20 days are usually required for the recovery of the normal appetite and spirits in mild outbreaks, while the return to a full flow of milk, in the case of milch cows, is seldom witnessed before the arrival of the following season.

In the malignant type of the disease it requires from three months to a year for an animal to recover. The mortality, as already stated, is usually low. The disease is more fatal in young animals that have been fed on infected milk, and produced death in from 60 to 80 per cent of these cases as a result of gastro-enteritis. In the present outbreak numerous new centers of infection have been started among hogs and calves which were fed on unpasteurized infected milk from creameries.

Diagnosis.—The recognition of this affection should not, as a rule, be difficult, especially when the disease is known to be in the vicinity; in fact, the group of symptoms form a clinical picture too decided to be doubted. The combination of high fever, vesicular inflammation of the mouth, and hot, painful, swollen condition of the feet, followed 24 to 48 hours later by the appearance of numerous blisters varying in size from that of a pea to that of a walnut on the udder and feet and in the mouth should prevent any serious or long-continued error in the diagnosis. However, in the inoculation of calves we have a certain and final test. In 24 to 96 hours after

inoculation the calves present the characteristic blisters. Such inoculation should be practiced, however, only by officials who are properly authorized to deal with contagious diseases.

How to Distinguish Foot-and-Mouth Disease from Other Affections.—The lesions of no other disease of cattle closely simulate the vesicular eruption of foot-and-mouth disease on the lining membrane of the mouth. When the blisters have ruptured, however, and the resulting lesions have become contaminated by numerous secondary forms of micro-organisms, the correct recognition of the disease may be involved in considerable difficulty.

Cowpox or horsepox may be accidentally transmitted by inoculation. But the eruption of the "pox" goes on to the development of a pustule, while in foot-and-mouth disease the eruption is never more than a vesicle, even though the contained fluid may become turbid. The inoculation test in the case of cowpox does not respond with fever and eruption for at least 10 days, and often longer.

Necrotic stomatitis (sore mouth due to a germ) may be distinguished from foot-and-mouth disease by the fact that in the latter disease there is a rapid infection of the entire herd, including the adult cattle, as well as the infection of hogs and sheep. The characteristic lesion of foot-and-mouth disease is the appearance of blisters containing a serous fluid upon the mucous membrane of the mouth and upon the udder, teats, and feet of the affected animals. In necrotic stomatitis blisters are never formed, destruction of the tissues occurring from the beginning and being followed by the formation of yellowish, cheesy patches principally found involving

the lining membrane of the mouth, especially the tongue and cheeks.

In mycotic stomatitis (sore mouth due to a fungus or mold), portions of the lining membrane become inflamed and in a few days it changes to a croupous membrane which peels off, leaving a raw surface, while the thin skin between the toes may also be inflamed. The previous history of the case; the failure of the blisters, if any appear, to spread extensively; the absence of vesicular eruptions on other portions of the body, notably the udder and teats, and, characteristically, the hoof, together with the absence of rapid spread to practically all cattle in the herd and the complete negative character of inoculation of calves, distinguishes between the local disease named and foot-and-mouth disease. Mycotic stomatitis occurs in only from 10 to 50 per cent of the animals in a herd, usually in the late summer or early fall after a dry spell, and it does not run a regular course.

The lesion, resulting from ergotism may be distinguished from those of foot-and-mouth disease by the lack of eruptions in the mouth and by the location of the disease at the tips of the ears, end of the tail, or upon the lower part of the legs, usually below the knees or hocks. The lesion of ergotism does not take the form of pustules or blisters, but manifests itself first as a swelling about the ankle, which later may slough and circumscribe the limb, forming a deep crack, extending entirely around the limb and forming a distinct line of demarcation between the healthy skin above and the diseased below. The absence of ulcerous sores on the coronet and between the claws, together with the healthy condition of the membranes of the mouth and the knowledge that the lesion upon the limb in question extends

uninterruptedly around it, should point conclusively to a diagnosis of ergotism and to the exclusion of all fears of foot-and-mouth disease.

In foul foot or ground itch of cattle, the inflammation of the skin and toes is general and not in certain spots, as in foot-and-mouth disease; the mouth remains unaffected and the presence of the disease may be traced to filth and poor drainage.

The severer forms of the disease might be confounded with certain general diseases. Where gastro-intestinal symptoms predominate acute gastric catarrh or inflammation of the intestines might be thought of. Involvement of the lungs might lead to a diagnosis of acute congestion of the lungs or pneumonia. The distinction is apparent in these diseases by the lack of vesicular eruption on the mucous membrane or skin, and also by lack of evidences of infection in the herd or neighboring animals.

Prevention and Eradication.—The measures to be adopted to prevent the spread of the affection must take into consideration the highly infectious nature of the disease, its ease of dissemination, and the liability of the virus to live outside of the body of an animal for long periods. Great care should therefore be observed in keeping healthy animals unexposed to the contagion. When an outbreak occurs in a community, the owner should make every effort to keep other animals from coming in contact with his diseased cattle. This especially applies to dogs, cats, goats, and poultry, which usually have access to the stables and barnyards and in this way furnish excellent means for disseminating the infectious principle. He should be equally particular in prohibiting any person from coming onto his

premises, especially an attendant or owner or other person in any way connected with cattle. Such a herd may be placed under quarantine, with an inspector appointed to keep the premises under constant surveillance.

This method of quarantine alone, while very satisfactory in many instances, is rather tardy in obtaining the desired result. The experience of European governments, already mentioned, shows that eradication by this method alone, when the disease has obtained a foothold, is practically impossible. For this reason when the disease breaks out in a country like the United States, where the contagion is likely to spread rapidly by means of infected cars, manure, hay, and other feed, and where the results of its obtaining a firm foothold would be so disastrous, it seems that this method of temporizing is rather tedious, and more radical steps are required in order to suppress and eradicate completely the infection in the quickest and most thorough manner possible.

It would therefore appear better to concentrate the expense incident to the extermination of foot-and-mouth disease by purchasing and slaughtering all affected and exposed cattle after judicious appraisement. The carcasses of these animals should be totally destroyed, preferably by cremation, or otherwise by burying them in a hole 6 feet deep and covering them with air-slaked lime. The infected stable should be disinfected by thoroughly cleaning it, scrubbing the floor with hot water, brushing down all loose dust from the walls, and tearing off all woodwork which is partly decayed. Then the whole interior of the stable should be disinfected with one of the following substances:

A 5 per cent solution of pure carbolic acid.

Chlorid of lime, U. S. P. strength (30 per cent available chlorin), 1 pound to 3 gallons of water.

Formaldehyde, 1 quart 40 per cent solution to 5 gallons of water.

A 3 per cent solution of cresol compound, U. S. P., or accepted substitute therefor, containing at least 50 per cent cresylic acid.

All stable utensils should be thoroughly cleaned and disinfected by the application of a solution of one of the above disinfectants. The manure should be burned or disinfected and spread over ground (other than meadow land) that is to be turned under. No other cattle should be purchased for at least sixty days after the complete disinfection of the premises.

The success in eradicating the disease by combined quarantine, slaughter, and disinfection, as practiced in the United States, Denmark, Great Britain, and a few other countries, demonstrates in a striking manner the efficacy of slaughtering and the futility of relying upon quarantine alone in stamping out the disease.

Inoculation has been adopted in some countries in order to have the disease spread quickly through the herds, and while this practice has undoubted value where the disease is indigenous, it is not desirable in this country and should not be adopted.

As a rule medical treatment with a view to curing affected animals is not to be recommended under conditions prevailing in the United States, where the disease has not become established, and the first object is to stamp it out as quickly as possible. Even though most animals would recover, with or without treatment, it would be practically impossible, while they were being held for recovery, to prevent the spread of the infection to others. The disease would be likely to spread faster

than it could be cured. As already pointed out, it has been found impossible to prevent absolutely the spread of the contagion by the strictest quarantine alone, under the usual farm conditions. In addition, the affected animals that have passed through the disease may become a source of further infection as virus carriers for weeks and months after they have apparently recovered, and are susceptible of reinfection, as one attack does not confer permanent immunity.

Foot-and-Mouth Disease in Man.—Foot-and-mouth disease is primarily and principally a disease of cattle; secondarily and casually, a disease of man. It is transmissible to man through the eating or drinking of raw milk, buttermilk, butter, cheese, and whey from animals suffering from foot-and-mouth disease. It is also transmitted directly, though more rarely, from the salivary secretions or other infected material which may gain entrance through the mucous membrane of the mouth. It is doubtful whether the disease can be transmitted to man by cutaneous or subcutaneous inoculation, though it is probable that the infection may be communicated if the virus directly enters the blood through wounds of any kind. Children are not infrequently infected by drinking unboiled milk during the periods in which the disease is prevalent in the neighborhood, while persons in charge of diseased animals may become infected through contact with the diseased parts or by milking, slaughtering, or caring for the animals.

The symptoms in man resemble those observed in animals. There is fever, sometimes vomiting, painful swallowing, heat and dryness of the mouth, followed by an eruption of vesicles on the mucous membrane of the mouth, and very rarely by similar ones on the fingers.

The vesicles appear on the lips, gums, cheek, and edge of the tongue, and are about the size of a pea. The vesicles soon rupture, leaving a small erosion which is soon covered by a thin crust under which the new formation of epithelium proceeds rapidly. The skin eruption mostly appears on the hands, tips of the fingers, base of the nails, and more seldom on the toes and other parts of the body. Besides these local changes, during the course of the disease there are occasionally observed headache, pain in the limbs, vertigo, abdominal cramps, vomiting, diarrhea, and weakness. The disease is very seldom fatal, usually appearing in a very mild form except in weakened children, in whom an accompanying intestinal catarrh may lead to a fatal termination.

Veterinarians who have had considerable experience with the disease among animals regard the human affection as by no means uncommon in countries where foot-and-mouth disease prevails, but the disturbance of health is usually too slight to come to the notice of the family physician.

But few outbreaks of the disease have occurred in the United States, and therefore cases of its transmission to man in this country are quite rare. Dr. James Law reports having observed the disease in man from drinking infected milk during the epizootic of 1870 in the Eastern States; but the outbreaks of 1880 and 1884 affected such a small number of animals and were so quickly suppressed that no instance of its transmission to man was recorded. A few cases have been reported by Brush accompanying the New England outbreak of 1902. Similar reports have been likewise received concerning the appearance of vesicular eruptions in the mouths of children during the 1908 and 1914 outbreaks,

and the history of these cases incriminates the milk supply.

Experiments by Loeffler and Froesch, as well as recent experiments which have been made in Denmark and Germany, indicate that the infection is comparatively easy to destroy by heat or the usual antiseptics. Milk pasteurized at a temperature of 60° C. for 20 minutes is safe so far as infection by foot-and-mouth disease is concerned.

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